Government of Malawi Ministry of Health

Integrated HIV Program Report October-December 2017

- ***Integrated HIV Program Supervision***
- ***HIV Testing Services / Early Infant Diagnosis***
- ***Blood Safety***
- ***Post Exposure Prophylaxis***
- ***HIV Exposed Child Follow-Up***
- ***Prevention of Mother to Child Transmission / Antiretroviral Therapy***
- ***TB / HIV***
- ***Sexually Transmitted Infections***
- ***Supply of HIV Program Commodities***

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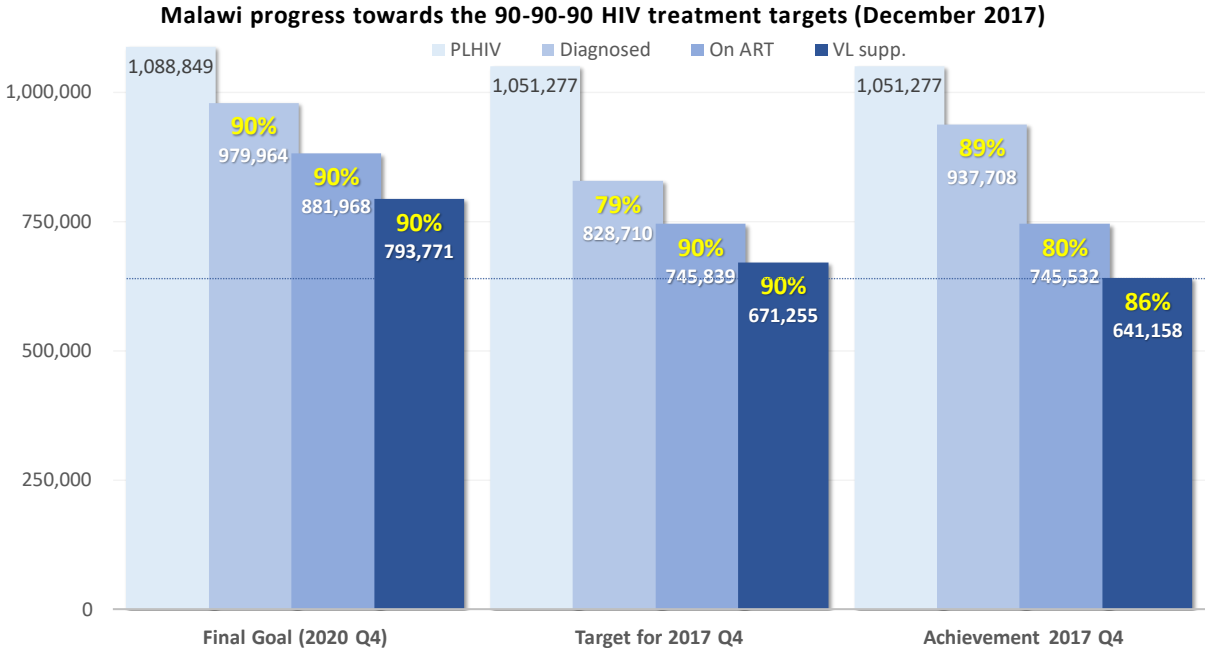
1 Executive Summary (October – December 2017)

- Scale-up of integrated HIV services had reached the following number of sites:
  - **751** static and **225** outreach HIV testing sites
  - **737** (static) ART sites; **626** of these started at least one pregnant or breastfeeding woman and **706** started asymptomatic patients (Test & Treat) this quarter
  - **673** sites with HIV-exposed children in follow-up
- **977,745** persons were tested for HIV and received their results; **234,211 (24%)** accessed HIV testing for the first time; **743,524 (76%)** were repeat testers and **38,146 (5%)** of these received confirmatory testing (after having tested positive in the past). **32,052 (3.3%)** clients received a positive result for the first time.
- **23,189 (97%)** of 23,866 blood units collected were screened for (at least) HIV, hepatitis B and syphilis.
- **146,974 (96%)** of 150,893 women at ANC had their HIV status ascertained; **11,173 (8%)** of these were HIV positive. **140,583 (99%)** of 141,479 women at maternity had their HIV status ascertained **9,993 (7%)** of these were HIV positive.
- **29,245** patients started ART this quarter; **61%** were classified as asymptomatic / in WHO stage 1 and started under the new "Test & Treat" policy.
- **745,532** patients were alive and on ART by end of December 2017. This means that **71%** of the estimated 1,051,000 HIV positive population was on ART. [1] ART coverage was **65%** (45,172 / 70,000) for children[2] and **71%** (700,360 / 981,000) for adults.
- **57,561 (86%)** of **67,137** viral load results from routine monitoring were <1000 copies/ml. Viral suppression rates for routine samples among children (0-14 years) and adults (15+ years) were **53%** and **88%**, respectively.
- **72%** of adults and **75%** of children were retained alive on ART at 12 months after initiation.[3]
- **646,635 (89%)** of 724,270 patients on first line adult ART were on TDF/3TC/EFV.
- **12,472** [4] **(91%)** of an estimated **13,700** [1] HIV infected pregnant women in Malawi were on ART this quarter. **8,342 (67%)** of these were already on ART when getting pregnant and **4,130 (33%)** started ART during pregnancy/delivery.
- An additional **1,371** [2] breastfeeding women started ART in WHO stage 1 or 2.
- **81%, 73%, 69%** and **63%** of women started while pregnant or breastfeeding were retained on ART at **6, 12, 24** and **36 months** after initiation, respectively.[3]
- **9,388 (7%)** of infants discharged alive from maternity were known to be HIV exposed, **8,870 (94%)** of these received ARV prophylaxis (nevirapine). **12,661** were enrolled in exposed child follow-up before age 2 months.
- A total of **12,695** HIV exposed children were newly enrolled for follow-up this quarter.

[1] 2018 Spectrum Model estimates for the HIV population in 2017.
[2] Number of children (0-14 years) on ART extrapolated from age-disaggregated cohort reports from sites with electronic medical record systems (see section 12.3 on page25).
[3] Actual retention rates are thought to be about **10%** higher due to misclassification of 'silent transfers' as defaulters in clinic-based survival/retention analysis. (see section 12.4)
[4] Adjusted for double counting due to patient transfers / 'failed ART initiations' among women lost to follow-up within 6 months of ART registration.

- Out of the total 1,051,000 estimated PLHIV by end December 2017:
  - An estimated **89%** of PLHIV knew their status (diagnosed)
  - **80%** of whom were on ART
  - **86%** of whom were virally suppressed.[5]
- This means that the Q4 2017 scale-up target for the population diagnosed was exceeded, while the target for the population on ART was met and the target for the population virally suppressed was missed by a narrow margin.
- The apparent gap between the estimated PLHIV diagnosed (937,708) and those on ART (745,532) was 192,176 individuals. This is inconsistent with the observation that each quarter since 2016, around 90% of people newly diagnosed have started ART (see **Figure 5** on page **14**). This discrepancy is likely explained by an increasing number of patients previously diagnosed and on ART who were tested again did not disclose their history to the HTS provider, resulting in a misclassification as "newly diagnosed" and "first-time ART initiation".
- The number of patients currently on ART is not affected by this misclassification because each patient can only be counted once as "retained on ART" at the end of each quarter.

Figure 1



[5] Estimation method for progress towards the 90-90-90 treatment targets:
'First 90' (937,708 diagnosed): the 76.8% MPHIA estimate for adults (15-64) diagnosed (self-reported and/or presence of ARVs in blood sample) is assumed to represent the status for all PLHIV (Spectrum) by end of Q1 2016 (1,024,444 x 76.8% = 786,773); add: 171,882 = 67% of 256,450 people reported as newly diagnosed between April 2016 – December 2017 (HTS program data adjusted for an estimated 33% of repeat testers misclassified as newly diagnosed); subtract: 20,886 (62%) of 33,939 estimated deaths among all PLHIV (2018 Spectrum model) between April 2016 –December 2017 to account for deaths among the diagnosed population (on ART and not on ART).
'Second 90' (745,532 on ART): patients retained alive on ART by end Q4 2017 from routine ART program reports.
'Third 90' (641,158 virally suppressed): extrapolated from the 86% of patients with a routine VL monitoring result <1000 copies/ml this quarter, applied to the 745,532 patients on ART.

2 Integrated HIV Program Overview

Malawi's National HIV Program has undergone several important policy changes since its inception in 2004. The 3rd Edition of the ***Malawi Integrated Clinical HIV Guidelines*** was published in **May 2016**. Key new policies include:

- **Universal eligibility for ART ('Test & Treat'):** All children and adults with confirmed HIV infection should start ART without delay, regardless of clinical or immunological stage or any other criteria. Pre-ART services were discontinued once the universal 'Test & Treat' policy was fully implemented.

- Preferred use of a **lopinavir/ritonavir based** regimen to initiate **children under 3 years**. Introduction of lopinavir/ritonavir oral pellets to replace liquid formulation.

- Children under 24 months who start ART need a **confirmatory DNA-PCR**. This can be collected on the day of starting ART. No follow-up testing using rapid antibody tests.

- Introduction of routine **annual screening for hypertension** for all adults (30 years +) in ART follow-up.

- Continued roll-out of scheduled **viral load monitoring** to improve early detection of treatment failure and initiation of second line ART. A targeted / repeat **VL result of 1000+** copies / ml in a dried blood spot or plasma sample from patient with good adherence in the 3 months before sample collection is considered to confirm ARV treatment failure with an indication to start 2nd line.

The **decentralization of ART services** continues as new health facilities are established and existing facilities attain minimum staffing and infrastructure requirements for ART.

3 Supportive Site Supervision

3.1 Methods

The Department for HIV and AIDS has coordinated quarterly supportive supervision visits to all health facilities with ART services since the start of the national treatment program in 2004. Supervision teams are composed of: experienced HIV clinicians; nurses and M&E staff from health facilities in the public and private sector; district and zonal PMTCT and ART coordinators; program officers and technical staff from the Department for HIV and AIDS; technical staff from implementing partners. The TB and HIV programs have fully integrated their respective site supervision exercises since April 2015.

Each quarter, a one-day pre-supervision meeting is organised for all supervisors participating in the upcoming round to share program updates, discuss observations from the previous round, distribute materials and organise logistics, transport and accommodation.

Standard supervision forms are used to guide implementation of the supervision protocol, to update site information and collect M&E reports. Custom forms with previous data for each site are printed from the Department of HIV and AIDS Management Information System (DHA-MIS). Supervision forms include:

- Contact details of HIV service providers at each site
- Quality of service checklist
- Follow up on action points noted during the previous visit
- Next visit date
- M&E reports from HIV testing, ANC, maternity, exposed child and pre-ART follow-up, ART and TB
- Physical drug stock-level assessment
- Identification of sites in urgent need of clinical mentoring
- Semi-structured feedback and performance rating for the supervision teams by facility staff

One copy of the supervision form is returned to the Department for HIV and AIDS, where data are entered in a custom MS Access database (Department of HIV and AIDS Management Information System; DHA-MIS) to produce national reports and to manage program logistics and the commodity supply chain. A second copy of the supervision form is left at the sites.

The supervision protocol includes a systematic review and verification of primary records (patient cards and registers) at all sites. This effectively provides a quarterly quality audit for M&E records, which has resulted in exceptional accuracy and completeness of HIV Program data in Malawi. At the same time, the systematic chart review helps to identify complex cases or deviations from clinical protocol, allowing the supervision team to provide targeted mentoring and clinical advice. The quarterly supervision exercise also aims to boost staff morale and motivation through *Certificates of Excellence* that are awarded by MOH to sites with an excellent score on the quality of service checklist. A growing number of health workers from sites all over the country participate as supervisors in this quarterly exercise and this has strengthened the national HIV Program identity and has greatly facilitated communication between program staff at the national, zonal, district and facility level.

The HIV testing program usually conducts a separate supportive site supervision exercise each quarter, targeting a sample of HTC sites both within and outside of health facilities. Supervision teams consist of district, zonal and national level HTC coordinators, supported by implementing partners.

3.2 Supervision Outcomes

748 public and private sector facilities were visited for **clinical HIV program supervision** between 8th and 19th of January 2018.

The large number of sites was covered by **196** supervisors working in **32** teams that spent a total of **2,003 working hours** at the sites. Each site visit lasted on average **2.7** hours, but up to 2 days were spent at the busiest sites. **487 (65%)** sites were awarded a *certificate* for **excellent performance.** This number is higher than the previous quarter (475). **94 (13%)** sites had significant weaknesses and were rated to require **intensive mentoring**. Mentoring capacity will need to be further expanded.

Table 1

Outcomes of integrated HIV services supervision for 2017 Q4

Zone	Total facil. visited*	Supervision hours spent at facilities		Performance (# and % of sites)	
		Total	Average per site	Excellent perform.	Mentoring needed
NZ	131	329	2.5	89 68%	20 15%
CEZ	104	242	2.4	63 61%	11 11%
CWZ	171	419	2.5	115 67%	22 13%
SEZ	169	498	2.9	125 74%	14 8%
SWZ	173	515	3	95 55%	27 16%
Malawi	748	2,003	2.7	487 65%	94 13%

* includes facilities that were visited for assessment of readiness, but that may have not (yet) been designated to provide integrated HIV services.

Table 1 summarizes the supervision outcomes by zone. Most facilities were using the standard national M&E tools **181** sites had cumulatively registered more than 2,000 ART patient and **68** of these had registered more than 5,000. **107 (59%)** of these high burden sites were using electronic data systems. Some NGO supported sites were using custom tools compatible with the national standard reporting requirements.

4 Inventory of Sites and Services

4.1 Sites and Services

There were **752** static and **225** outreach HIV testing sites in Q4 2017.

Table 2

Facilities with integrated HIV services in the 5 Zones. Availability of services defined by performance (at least 1 patient enrolled) during 2017 Q4

Zone	Total fac.(1)	Facilities providing HIV services				CD4 count machines (2)		
		Exp. child	Pre-ART	PMTCT B+	ART	Installed	Functional	Results
NZ	135	120 89%	0 0%	104 77%	129 96%	8 6%	0 0%	0
CEZ	104	101 97%	0 0%	93 89%	103 99%	1 1%	0 0%	0
CWZ	171	142 83%	0 0%	137 80%	168 98%	7 4%	3 43%	879
SWZ	173	150 87%	0 0%	137 79%	170 98%	14 8%	4 29%	226
SEZ	169	160 95%	0 0%	155 92%	167 99%	6 4%	0 0%	0
Malawi	752	673 89%	0 0%	626 83%	737 98%	36 5%	7 19%	1,105

(1) Total facilities in the public / private sector designated to provide integrated HIV services in this quarter. Individual site selection is reviewed and may change each quarter.

(2) CD4 machines that have produced at least 1 result during the reporting period are defined as functional.

Table 2 shows the distribution of the **752** sites designated to provide clinical HIV services in Q4 2017, by zone. At the national level, there were **737** (static) sites with at least one patient on ART; **626** sites had enrolled women under PMTCT Option B+; **673** had enrolled HIV exposed children for follow-up. ART services were now available at almost all designated sites in the 5 zones.

CD4 count machines (including 'point of care' machines) were installed at **36** sites, and **7** (19%) of these had produced at least 1 result during Q4 2017. The total number of CD4 results produced **(1,105)** had decreased from the previous quarter (2,019). With the introduction of the 'Test & Treat' policy, routine CD4 count testing to determine when to start ART has become obsolete and only targeted CD4 counts are expected to continue.

4.2 Staffing of HIV Services

4.2.1 HIV Testing Services

The Department for HIV and AIDS has maintained a dedicated system for professional registration and performance tracking for HIV testing providers since 2011. This separate registration system is needed because HIV testing providers include lay persons with HIV testing training who are not registered with any other professional body. All testing providers are issued with a unique ID and a professional logbook for documentation of duty stations, trainings, sit-in observation and proficiency testing results. Logbook holders are requested to record the total number of tests done at the end of each month. Logbooks are routinely reviewed during quarterly supervision and key performance data for each provider are summarized on the site supervision forms.

Table 3

	2017 Q1		2017 Q2		2017 Q3		2017 Q4	
Sites visited	**736**		**741**		**741**		**748**	
Sites with any tests done	698	*95%*	704	*95%*	709	*96%*	713	*95%*
Sites with registered HTC staff	679	*92%*	682	*92%*	684	*92%*	687	*92%*
Total HTC staff at visited sites	**4,064**		**4,134**		**4,311**		**4,414**	
Providers with any DBS (VL) samples collected	1,519	*37%*	1,720	*42%*	1,894	*44%*	1,832	*42%*
Providers with any DBS (EID) samples collected	1,310	*32%*	1,422	*34%*	1,513	*35%*	1,491	*34%*
Providers with any Syphilis test done	1,732	*43%*	1,877	*45%*	1,972	*46%*	1,930	*44%*
Providers with any HIV test done	2,657	*65%*	2,807	*68%*	3,034	*70%*	2,839	*64%*
Providers with 300+ HIV tests done this quarte	895	*29%*	917	*28%*	1,131	*31%*	1,032	*28%*
Logbooks reviewed	3,095	*76%*	3,330	*81%*	3,637	*84%*	3,647	*83%*
Providers participating in PT this quarter	2,131	*69%*	792	*24%*	2,843	*78%*	845	*23%*
Total DBS (VL) Samples	**36,304**		**44,014**		**53,925**		**47,901**	
Total DBS (EID) Samples	**9,531**		**9,902**		**10,383**		**10,790**	
Total Syphilis tests	**121,943**		**144,171**		**154,219**		**172,812**	
Total HIV tests (HTC register)	**982,561**		**1,018,328**		**1,186,676**		**977,745**	
HIV tsts accounted for by individual staff	721,001	*73%*	749,644	*74%*	890,385	*75%*	797,188	*82%*
Source: logbooks	658,490	*91%*	717,568	*96%*	864,477	*97%*	772,310	*97%*
Source: HTC register	62,511	*9%*	32,076	*4%*	25,908	*3%*	24,878	*3%*
Total tests by staff with 300+ tests	545,767	*76%*	568,786	*76%*	696,625	*78%*	623,449	*78%*

687 (92%) of the 748 visited facilities had registered HIV testing providers and **713** (95%) sites had performed at least one test during Q4 2017. **3,647 (83%)** of **4,414** providers had their logbooks available for review. This is similar to the previous quarter (84%). Based on the reviewed logbooks **2,839 (64%)** had done at least one HIV test during the quarter; **1,930 (44%)** at least one syphilis test; **1,832 (42%)** had collected at least one VL sample; and **1,491 (34%)** had collected at least EID sample.

The national HIV reference laboratory organizes PT rounds every 6 months for all practising HIV testing providers (in Q1 and Q3). According to the 3,647 reviewed logbooks, **845 (23%)** testing providers had participated in proficiency (panel) testing (PT) this quarter. Documentation of PT may be incomplete given that not all logbooks were available for review.

797,188 (82%) of all 977,745 HTS tests conducted this quarter (according to HTC register reports) were accounted for by individual HTS staff working at the visited sites. **772,310 (97%)** of these tests were documented in the reviewed logbooks and an additional **24,878 (3%)** could be attributed to individual providers from staff codes in the HTS registers. **1,032 (37%)** of 2,839 providers with documented activity had tested 300 clients or more this quarter. A dedicated full-time HTC provider is expected serve 300 clients per quarter (average of 5 clients per day for 60 working days per quarter). The **1,032 staff** who met or exceeded this target provided **623,449 (78%)** of the total number of tests accounted for by individual staff this quarter.

4.2.2 ART/PMTCT

Integrated HIV program supervision has included a staffing census for ART clinics since Q3 2014. This census is undertaken during the site visits, indicating all staff members who actually worked at the ART clinic on the most recent clinic day. The census is designed to provide an accurate snapshot of the actual staffing of ART services each quarter. The numbers collected

may be slightly lower than longer term averages, because around 150 service delivery staff are themselves participating in the supervision exercise and will not be counted as having worked in their ART clinic during the supervision period. The table below shows that total staffing levels have been fairly consistent over the last 3 quarters.

A total of 2,965 staff were providing ART services in January 2018. **721** were clinicians (physicians, clinical or medical officers); **1,164** were nurses and **1,031** were auxiliary staff (health surveillance assistants, clerks, etc.)

Table 4

	2017 Q1		2017 Q2		2017 Q3		2017 Q4	
Clinicians	715	*25%*	726	*25%*	725	*24%*	721	*24%*
Nurses	1,136	*39%*	1,116	*39%*	1,151	*38%*	1,164	*39%*
Pharmacy staff	22	*1%*	45	*2%*	53	*2%*	49	*2%*
Auxiliary Staff	1,006	*35%*	967	*34%*	1,067	*36%*	1,031	*35%*
Total	**2,879**		**2,854**		**2,996**		**2,965**	

An estimated 3.6 million ART patient visits are currently managed at the 737 ART sites per annum, based on 745,532 patients alive on ART and an average dispensing interval of 2.5 months. With 260 working days per year, an average of 13,764 patient visits is therefore managed by the ART sites per working day. At current staffing levels, this translates into an average of **19** ART patient visits per clinician and **12** per nurse per day. This approximate HRH capacity assessment does not take account of site-specific differences in patient burden and staffing levels and there are several medium and high burden sites with sub-optimal staffing. However, the national treatment program is fully decentralized to the health centre level and the program continues to devolve the growing patient burden to peripheral facilities. Since 2011, the steepest increase in ART patient numbers has been recorded at the 300 small peripheral sites that have the largest collective staffing capacity (see Figure 8 on page 30).

5 HTS Program Outputs

HIV testing protocols were revised in 2016. A new HIV testing register was implemented in the course of a national re-training campaign for all HTC providers between May and November 2013. Protocol revisions include:

- Clear recommendations for re-testing based on the client's test result and risk assessment
- Proper documentation of confirmatory testing for clients with a prior positive result (usually performed at enrolment into care).

The HIV testing program observed a number of challenges. First, although quality control (QC) samples were available at most sites, some sites had not carried out any QC testing. Space constraints are common and remain a challenge. Providers have to share the testing rooms at most facilities. Some mentors supported by partners are not adequately trained and the mentorship provided is therefore not comprehensive. 'Conveyor-belt' HIV testing is still being practised in some facilities despite ongoing attempts to reinforce the one-client-in-session testing policy. Finally, some implementing partners have introduced modified M&E tools at the facilities they are supporting.

5.1 Quality Control (QC) Testing

The national HIV testing protocol requires all sites to perform QC testing at least once per week. Additional QC is required when a new consignment of test kits is received; when starting a new lot; when a new provider joins the facility; when test kits have been exposed to temperatures above manufacturer recommendations. The QC procedure involves testing each of the 2 rapid test kits used in the national algorithm with a known negative and a known positive serum to confirm that the tests show the expected results. This means that 2 positive and 2 negative results are expected for each complete QC set. QC results have been documented in a dedicated section in the standard HIV testing register since 2013. From Q3 2016, QC results have been systematically reviewed during the integrated HIV program supervision.

632 (89%) of the 713 active testing sites had documented at least 1 QC set this quarter, but only **575 (81%)** had recorded the minimum of 12 sets (one for each week). At **559 (97%)** of these, all samples produced the expected result.

5.2 HIV Testing and Counselling Outputs

977,745 people[6] were tested and counselled for HIV between October and December 2017. This is a **18%** decrease from the previous quarter (**1,186,676**). Similar to previous quarters, the high performance was owed to the deployment of new dedicated staff (HIV Diagnostic Assistants, HDAs) at about 200 facilities. HDAs are currently hired by PEPFAR implementing partner organizations and seconded to public sector facilities, primarily to ensure routine provider-initiated HIV testing for patients.

944,008 (97 %) of all tests were performed at health facilities, **4,027 (<1%)** were done in stand-alone HTC sites and **29,710 (3%)** were done outside of facilities / in the community. **32,052** people were reported as newly diagnosed with HIV this quarter. Out of these, **31,058 (97%)** were diagnosed at health facilities; **163 (<1%)** at stand-alone HTC sites; and **831 (3%)** through community-based testing. The 'yield' for new diagnoses was **3.4%** at health facilities, **4.2%** at stand-alone HTC sites and **2.9%** in community settings (excluding clients with a previous positive result from the denominator for all 3 settings).

However, based on the triangulation of MPHIA results and program data for the 90-90-90 coverage estimates, **at least 33%** of all clients classified as "new positive" in HTS registers are assumed to be undisclosed repeat testers. Discounting 33% from the 32,052 reported "new positives" results in an estimated **21,475** genuine new diagnoses this quarter. This reduces the true 'yield' in the HTS program to **2.3%**.

5.3 HIV testing access type

672,358 (69%) of people tested were patients receiving provider-initiated testing and counselling (PITC); **293,711 (30%)** accessed voluntary testing and counselling, door-to-door, community-based testing, etc.; and **11,676 (1%)** came for testing with a *Family HTC Referral*

[6] Reports from the HTC register are based on client encounters. It is not possible to de-duplicate people who access HTC multiple times in the reporting period. However, very few individuals come for repeat testing in less than 3 months and the number of HTC encounters in one quarter is therefore assumed to represent individuals.

Slip (FRS) that was issued to a family member at a prior HTS encounter. Based on a total of 62,050 FRS issued to index clients this quarter, the successful referral rate for family members was **19%** (11,676/ 62,050). Issuance and utilization of FRS have increased considerably over the last 2 quarters.

5.4 Age and sex distribution among HIV testing clients

Out of **977,745** people tested and counselled, **35%** were males and **65%** were females. **32%** of females were pregnant. The ratio of males **(44%)** to non-pregnant females **(56%)** was similar, implying gender-balanced access to HTS services. Pregnant women have to be excluded from this comparison because testing among pregnant women is almost entirely provider-initiated and there is no comparable access route targeting males.

209,565 (21%) of all people tested accessed HTC with their partners (as a couple).

49% of all people tested and counselled were 25 years and above, **40%** were adolescents or young adults (15-24 years) and **11%** were children (<15 years). **4,213 (<1%)** of rapid tests done were among infants.

Figure 2 and **Figure 3** show that the absolute increase in testing output since introduction of the HDA cadre in 2016 was mainly driven by non-pregnant females, males and the age groups 15-24 and 25 years and above. From Q3 to Q4 2017, the number of males, non-pregnant females and pregnant women tested dropped by 28%, 14% and 3%, respectively.

Figure 2: Distribution of sex and pregnancy status among clients tested by quarter

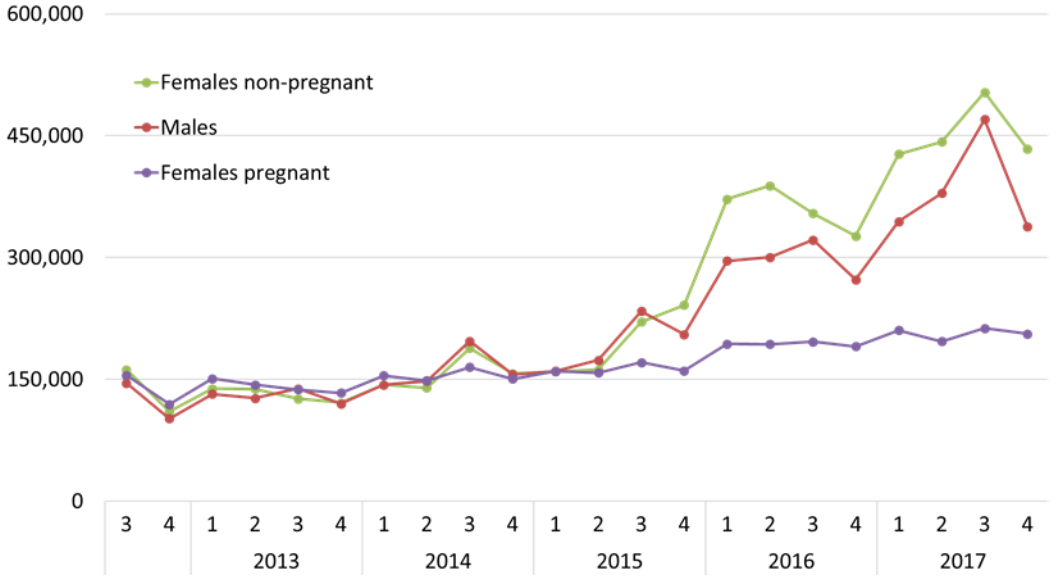
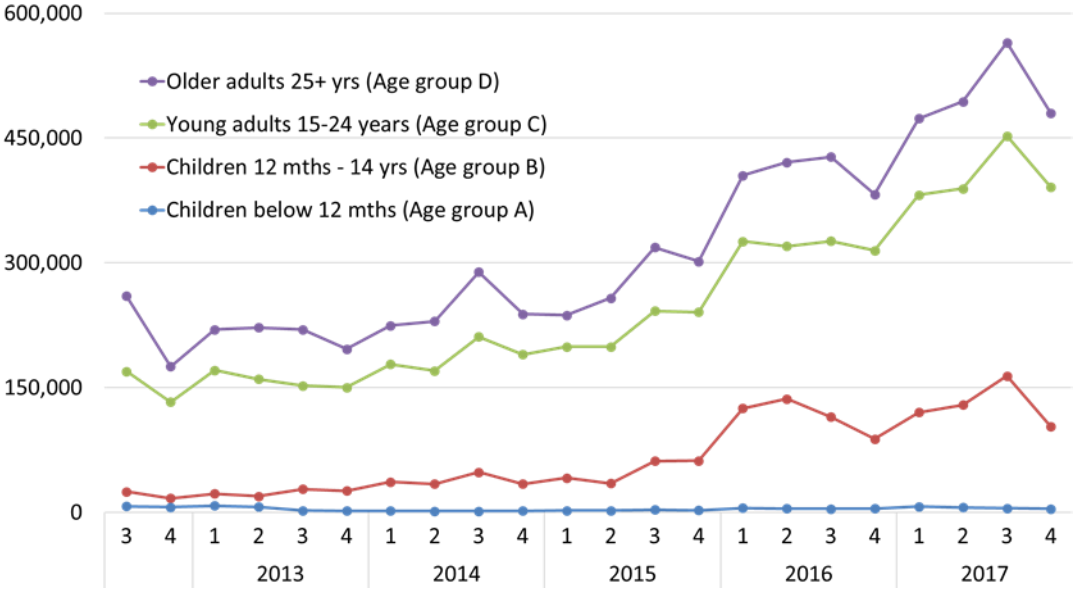


Figure 3: Distribution of age among clients tested by quarter



5.5 First time, repeat and confirmatory test results

All HIV positive patients enrolled in care need a confirmatory HIV test to rule out any possibility of mix-up of test results or fraudulent access to ART. Confirmatory testing is done either at enrolment into pre-ART follow-up, or when starting ART if the test to confirm was not done in pre-ART. The 2016 national guidelines require a confirmatory DNA-PCR at the time of starting ART for all children under 24 months, regardless if the initial diagnosis was based on a positive DNA-PCR or a rapid antibody test. Follow-up rapid antibody testing for children is no longer recommended. However, roll-out of this new policy has been delayed due to the slow progress with refresher trainings.

234,211 (24 %) of all clients tested accessed testing for the first time and **743,524 (76%)** were repeat testers. Based on the cumulative number of people who accessed HTC for the first time, a total of **8,352,596** people have been tested since introduction of the *first time HTC access* indicator in July 2007.

32,052 (3.3%) out of all clients were reported to have received a positive result for the first time. Positive rapid test results among infants (**201**) and inconclusive test results (**279)** both accounted for **<1 %** of new results given to clients.

703,404 (95%) of 743,524 repeat testers reported a *last negative* result. **38,586 (5%)** were reported as *previous positives* and all of these should have been classified as receiving a confirmatory test. For most of these previous *positives*, testing was probably initiated by a health worker before ART initiation. *Confirmatory test results* accounted for **38,146 (99%)** of previous positive clients. The remainder (440) may have been misclassified as new positive or new inconclusive because they were among clients who independently sought confirmation of their positive status. **38,146 (99%)** of 38,425 confirmatory test results were concordant positive and **279 (1%)** were classified as *confirmatory inconclusive*. This category includes parallel concordant negative and discordant test outcomes (Determine HIV1/2 and Uni-Gold HIV1/2 are used in parallel for confirmatory testing). The number of clients who did not have a concordant positive confirmation may be explained by selective confirmatory testing among

clients with doubts about their previous positive status, but it underscores the importance of both routine confirmatory testing before ART initiation as well as the need to continue strengthening quality assurance.

Figure 4

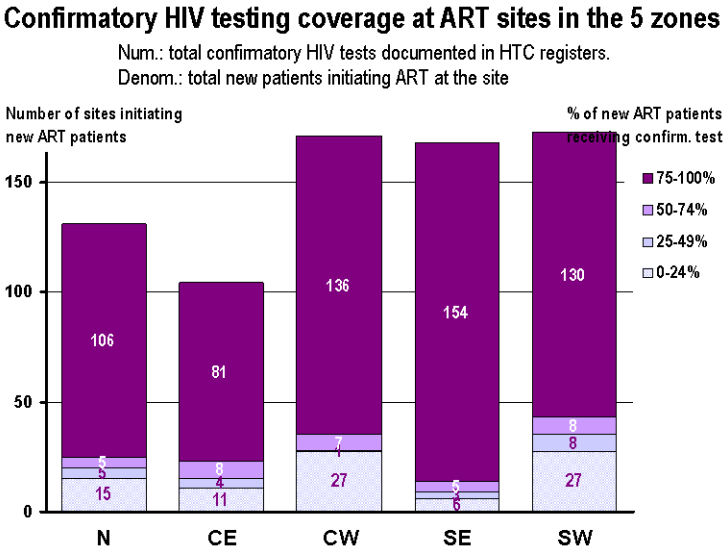


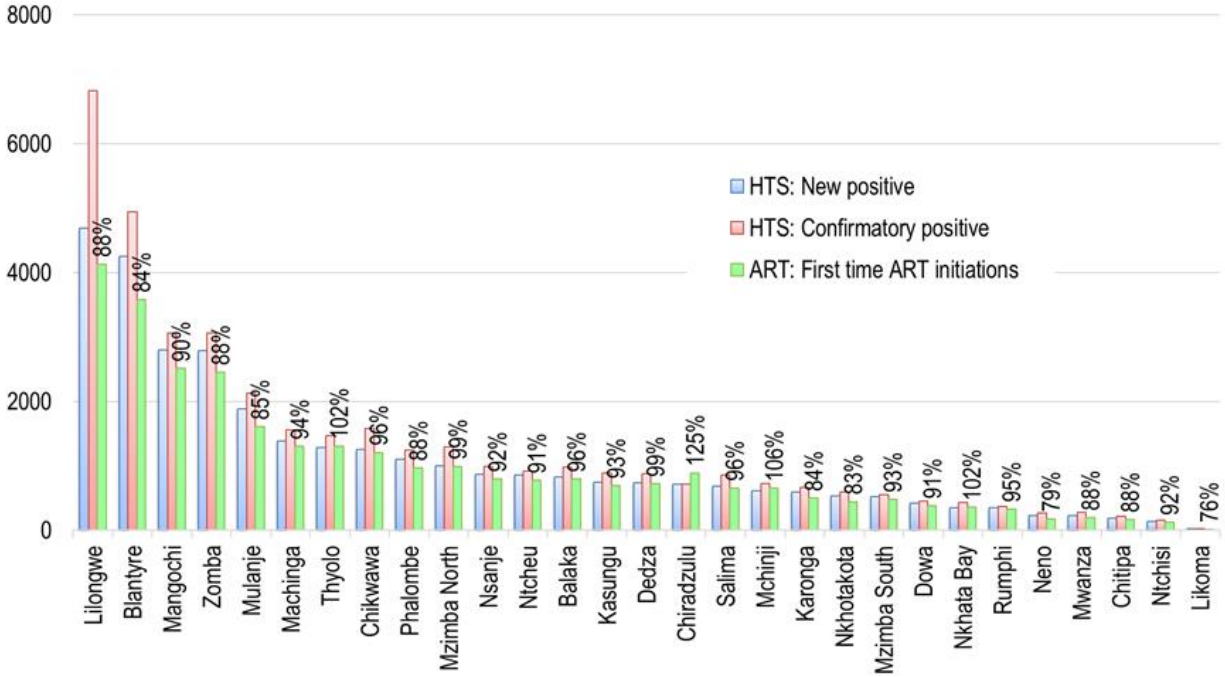
Figure 4 shows the number of ART sites by zone, stratified by the ratio of patients receiving confirmatory testing over the number of new ART patients. At 607 sites, the number of patients receiving confirmatory testing exceeded the number of new ART initiations. This was particularly common in the SE and CW zones with 154 and 136 sites, respectively. Overall, confirmatory testing is now almost exclusively performed at the site of first diagnosis, rather than at the clinic before ART initiation.

5.6 Linkage from HIV diagnosis to ART

Figure 5 shows a triangulation of HIV testing and ART program data by district. At the national level, the **29,245** patients who initiated ART this quarter represent **91%** of the **32,052** clients tested positive for the first time. Linkage rates ranged from 76% in Likoma to 125% in Chiradzulu. Lilongwe had the highest number of new diagnoses (**4,685**) but 'only' **4,133** patients starting ART, implying a district-level linkage of **88%**. However, this apparently low linkage was likely due to patients diagnosed in Lilongwe who started ART in neighbouring districts (e.g. Mchinji), where implausibly high linkage rates were calculated. Very high or low linkage rates suggest that cross-border access to testing and ART was also seen in other districts (e.g. Chiradzulu, Mchinji, Neno, Likoma, etc.).

In **28 (97%)** of the 29 districts, the number of confirmatory positives exceeded the number of new positives. The remaining district had an equal number confirmatory positives and new positives. Lilongwe recorded the highest excess with **2,138 (46%)** more confirmatory positives than new positives (**4,685**). This means a large number of clients who disclosed their previous positive status were getting tested again. Lilongwe, Blantyre, Chikwawa, Mzimba North, Zomba, Mangochi and Mulanje accounted for **4,235** (69%) out of the **6,094** 'excess' confirmatory positives in the whole country this quarter. At the national level, the number of confirmatory positives exceeded the number of ART initiations by 8,901 (30%).

Figure 5: Number of new positives, confirmatory positives and new ART initiations in Q4 2017 by district (percentages represent ART initiations over new positives for each district)



The full national HIV testing data are presented in the **Appendix**.

6 DNA-PCR testing for Early Diagnosis of HIV in Infants (EID)

DNA-PCR testing is performed at 10 labs (Mzuzu Central Hospital, Mzimba District Hospital, Kamuzu Central Hospital, Queen Elizabeth Central Hospital, DREAM Blantyre, DREAM Balaka, Tholo District Hospital, Zomba Central Hospital, Nsanje District Hospital and Partners in Hope, Lilongwe). HIV Diagnostic Assistants and EID counsellors collect infant blood samples as dried blood spots on filter paper. Health facilities are requested to fill a standard EID DNA-PCR logbook to document EID samples and to track results. The logbook includes the dates of collection, dispatch, receipt of result from the lab and communication of the result to the mother. Supervision teams were asked to collect basic data from these logbooks.

581 (86%) of 673 sites with HIV exposed children in follow-up had collected and recorded at least 1 DNA-PCR sample during Q4 2017. A total of **11,415** DNA-PCR samples were collected and recorded. By the time the logbooks were reviewed (between 1 and 3 weeks after the end of the quarter), results had been received at the sites for **6,352 (56%)** of these specimens and **3,720 (59%)** of these results had been communicated to the mother. The proportion of results received at the sites was **64%**, **70%** and **25%** for samples collected in October, November and December, respectively. A total of **311 (5%)** results received at the sites were positive.

The **10 laboratories** registered the **receipt** of **6,520** DNA-PCR samples that were collected during Q4 2017. This represents **57%** of the 11,415 samples recorded in the logbooks at the sites.

A total of **9,101** valid DNA-PCR results were dispatched from the labs in Q4 2017. **6,616 (73%)** of the dispatched results were from samples collected in Q4 2017, while 2,485 (27%) were from samples collected in the previous quarters. The median time between sample collection

and dispatch of the result was **22 days**; 50% of results were dispatched between 15 and 31 days after sample collection.

5,680 (62%) of all results were from infants under 2 months old at the time of sample collection. 2.171 (24%) were 2-5 months; 688 (8%) were 6-11 months; 96 (1%) were 12-17 months; and 78 (1%) were 18 months or older. The date of birth and/or specimen collection was missing for 388 samples, some of which may include 'tie-breaker' samples for patients with inconclusive rapid test results.

The number of positive DNA-PCR results has increased considerably since April 2016 when the new policy of routine confirmatory PCR testing for all children started on ART below age 2 years was introduced. Reliable identification of these confirmatory DNA-PCR results is currently not possible from the LIMS, leading to double counting of children with initial positive results.

Table 5

Age at sample collection	Tot. Results	Positives	
<2 months	**5,680**	**77**	*1.4%*
2-5 months	**2,171**	**124**	*5.7%*
6-11 months	**688**	**128**	*18.6%*
12-17 months	**96**	**49**	*51.0%*
18 months +	**78**	**46**	*59.0%*
(missing)	**388**	**21**	*5.4%*
Total	**9,101**	**445**	*4.9%*

445 (4.9%) of all results dispatched were positive. The age-specific number (%) of positive results is shown on the left. Receipt of the DNA-PCR result at the health facility is a prerequisite to updating of patient records and for appropriate clinical management. Considering the delays between sample collection and dispatch of the test result from the lab, the child's age at the time of dispatch of the result from the lab is a useful indicator for early infant diagnosis and treatment. The table below shows the distribution of ages when results were dispatched from the lab.

Table 6

Age when result sent from lab	Tot. Res.	*(Col %)*	Positives	*(Col %)*
<2 months	**1,549**	*17%*	**19**	*4%*
2-5 months	**6,202**	*68%*	**146**	*33%*
6-11 months	**860**	*9%*	**151**	*34%*
12-17 months	**154**	*2%*	**65**	*15%*
18 months +	**85**	*1%*	**49**	*11%*
(missing)	**251**	*3%*	**15**	*3%*
Total	**9,101**	*100%*	**445**	*100%*

Out of **445** positive results dispatched, only **19 (4%)** were sent before the child was 2 months old. A total of **165 (37%)** positive results were sent before the child was 6 months old and **316 (71%)** were sent before the child was 12 months old. A total of 130 infants were started on ART in WHO stage 1 or 2 on the basis of confirmed HIV infection (see ART section below). Due to the potential for double counting of positive infants in the lab data, this ratio can no longer be interpreted for early infant ART linkage.

7 Blood Safety

The Malawi Blood Transfusion Service (MBTS) is striving to provide safe blood products for the entire country using voluntary non-remunerated donors and quality assured screening for

transfusion transmissible infections (TTIs). For the last years, MBTS has not been able to meet the national demand and several hospitals continue to supplement or rely entirely on blood units collected from replacement donors. Complete reports from MBTS have been available throughout, but blood safety reports from health facilities have not been consistently available and it has been challenging to compile national reports relying on the data passively submitted by the sites. Therefore, the HIV program supervision teams were tasked with active collection of blood donor and cross-matching data from all visited health facilities. Some of the visited laboratories were not using the standard MOH registers and the aggregation of data for reporting may have been affected by incomplete documentation at some sites.

A total of **23,866** blood units were collected in Malawi during Q4 2017. MBTS collected **19,248 (63%)** of these, **100%** of which were screened comprehensively for the relevant TTIs (HIV, Hepatitis B, Hepatitis C, syphilis, malaria). In addition, **61** hospitals in Malawi collected a total of **4,618** units from replacement donors. **3,941 (85%)** of these units were screened for at least the 3 key TTIs (HIV, HepB and syphilis) and **3,121 (79%)** of these were also screened for HepC and malaria. This means that a total of **23,189 (97%)** of all units collected this quarter were screened at least for HIV, HepB and syphilis. Based on the blood donor registers at the sites that collected blood from replacement donors, 677 were screened with any other combination of tests for TTIs.

A total of **7,177** potential replacement donors were documented in the blood donor registers at the facilities and **4,618 (66%)** of these ended up donating. Facilities may have used different screening algorithms and potential donors may have been excluded on the basis of different criteria, including TTIs, blood group, haemoglobin concentration and/or clinical conditions. Testing for less prevalent TTs may have only been carried out for donors who passed the screening for more common conditions. In total, 79% of potential donors were tested for HIV, 79% for HepB, 77% for syphilis, 66% for malaria and 55% for HepC. Detailed data on outcomes of individual tests among all potential blood donors are presented in the Appendix.

8 Preventive Services

8.1 Post Exposure Prophylaxis (PEP)

A total of **2,566** persons received PEP during Q4 2017. This is similar to the previous quarter (2,582).

8.2 Provider-Initiated Family Planning (PIFP)

The Integrated Clinical HIV Guidelines encourage health workers to routinely provide condoms to all adults in ART clinics. Women should also be offered at least the standard injectable contraceptive (Depo-Provera) at any ART visit. This policy aims to address the significant unmet need for family planning that had been observed among HIV patients in Malawi and to reduce the number of unwanted pregnancies among HIV-infected women (***PMTCT Prong 2***). HIV program reporting on PIFP is limited to women who received an injection of Depo-Provera in ART clinics during the last quarter. The report does not account for family planning need nor does it include women who accessed family planning services outside of HIV clinics.

Table 8 shows that **93,986 (24%)** of 384,366 women received Depo-Provera from ART clinics in Q4 2017. The central west zone had achieved the highest coverage. Patient coverage has slightly increased from 24% in the previous quarter. 585 (79%) of ART/PMTCT sites had stocks of Depo-Provera in January 2017. This is similar to previous quarter with 585 sites with Depo in October 2017.[7] The HIV Program is no longer supplementing FP supplies through procurement and distribution of additional Depo-Provera to sites.

8.3 Cotrimoxazole Preventive Therapy (CPT)

All patients in HIV care are universally eligible for CPT in order to reduce the frequency and severity of several HIV-related diseases. Patients with confirmed HIV infection are provided lifelong CPT in ART clinics. CPT is also given to HIV exposed children until exposure to breast milk has stopped and HIV infection has been ruled out (usually around age 24 months). Fewer than 5% of patients are expected to require stopping of CPT due to toxicity, so the targeted CPT coverage is around 93%.

Table 7
Number and % of patients retained in HIV care who were on cotrimoxazole (CPT) by the end of 2017 Q4.

	CPT							
	Exp. child		Pre-ART		ART		All patient groups	
Zone	Tot. pat.	On CPT	Tot. pat.	On CPT	Tot. pat.	On CPT	Tot. pat.	On CPT
NZ	11,138	**7,535** *68%*	0	**0** *0%*	71,694	**66,665** *93%*	82,832	**74,200** *90%*
CEZ	9,503	**7,372** *78%*	0	**0** *0%*	58,766	**56,337** *96%*	68,269	**63,709** *93%*
CWZ	22,896	**17,025** *74%*	0	**0** *0%*	152,896	**138,058** *90%*	175,792	**155,083** *88%*
SEZ	38,015	**29,192** *77%*	0	**0** *0%*	224,934	**209,900** *93%*	262,949	**239,092** *91%*
SWZ	33,116	**25,478** *77%*	0	**0** *0%*	232,299	**206,973** *89%*	265,415	**232,451** *88%*
Malawi	114,668	**86,602** *76%*	0	**0** *0%*	740,589	**677,934** *92%*	855,257	**764,536** *89%*

Table 7 shows that **764,536** (**89%)** of 855,257 patients in care were on CPT at the end of Q4 2017.

8.4 Isoniazid Preventive Therapy (IPT), Family Planning and BP Screening

ART patients with a negative screening outcome for TB symptoms in the 5 districts with the highest TB burden (Lilongwe, Blantyre, Mangochi, Machinga, Chikhwawa) are currently eligible for IPT. During the January 2017 supervision visits, the single formulation tablets of isoniazid and pyridoxine were in stock at 277 and 220 facilities, respectively.

[7] Many Mission hospitals do not provide family planning.

Table 8 shows that **198,646 (27%)** of 740,589 patients in care were on IPT at the end of Q4 2017. IPT coverage among ART patients ranged from **40%** in Lilongwe to **83%** in Chiradzulu.

576,919 (78%) of 740,589 patients on ART were estimated to be 30 years or older. The 2016 national guidelines require screening for hypertension for all adults (30 years +) at the time of ART initiation and annually thereafter. **95,585 (17%)** of 576,919 were screened for BP at least once in the 2017 calendar year.

Table 8

Zone District	Patients on ART (all)					Women (18-49) on ART			Adults (30+) on ART		
	Total	On CPT		On IPT		**Total**	Given FP*		**Total**	BP screened**	
Malawi (National)	**740,589**	677,934	*92%*	198,646	*27%*	**384,366**	93,986	*24%*	**576,919**	95,585	*17%*
Northern Zone	**71,694**	66,665	*93%*	0	*0%*	**37,209**	7,505	*20%*	**55,850**	17,317	*31%*
Chitipa	**4,980**	4,038	*81%*	0	*0%*	**2,585**	857	*33%*	**3,879**	1,367	*35%*
Karonga	**12,601**	9,990	*79%*	0	*0%*	**6,540**	1,449	*22%*	**9,816**	3,229	*33%*
Nkhata Bay	**8,471**	7,958	*94%*	0	*0%*	**4,396**	279	*6%*	**6,599**	1,473	*22%*
Rumphi	**7,426**	7,350	*99%*	0	*0%*	**3,854**	837	*22%*	**5,785**	1,915	*33%*
Mzimba North	**23,487**	23,265	*99%*	0	*0%*	**12,190**	2,962	*24%*	**18,296**	5,687	*31%*
Mzimba South	**14,115**	13,460	*95%*	0	*0%*	**7,326**	993	*14%*	**10,996**	3,565	*32%*
Likoma	**614**	604	*98%*	0	*0%*	**319**	127	*40%*	**478**	82	*17%*
Central East Zone	**58,766**	56,337	*96%*	0	*0%*	**30,500**	6,862	*22%*	**45,779**	7,163	*16%*
Nkhotakota	**11,429**	11,143	*97%*	0	*0%*	**5,932**	1,065	*18%*	**8,903**	117	*1%*
Kasungu	**15,650**	15,023	*96%*	0	*0%*	**8,122**	2,228	*27%*	**12,191**	2,529	*21%*
Ntchisi	**4,385**	4,120	*94%*	0	*0%*	**2,276**	282	*12%*	**3,416**	411	*12%*
Dowa	**11,961**	11,327	*95%*	0	*0%*	**6,208**	2,631	*42%*	**9,318**	2,321	*25%*
Salima	**15,341**	14,724	*96%*	0	*0%*	**7,962**	656	*8%*	**11,951**	1,786	*15%*
Central West Zone	**152,896**	138,058	*90%*	37,780	*25%*	**79,353**	26,602	*34%*	**119,106**	21,577	*18%*
Lilongwe	**95,480**	86,014	*90%*	37,780	*40%*	**49,554**	20,217	*41%*	**74,379**	13,878	*19%*
Mchinji	**15,469**	14,659	*95%*	0	*0%*	**8,028**	109	*1%*	**12,050**	1,415	*12%*
Dedza	**17,699**	16,953	*96%*	0	*0%*	**9,186**	1,898	*21%*	**13,788**	3,678	*27%*
Ntcheu	**24,248**	20,432	*84%*	0	*0%*	**12,585**	4,378	*35%*	**18,889**	2,607	*14%*
South West Zone	**232,299**	206,973	*89%*	128,721	*55%*	**120,563**	23,000	*19%*	**180,961**	19,546	*11%*
Chiradzulu	**38,919**	34,575	*89%*	32,369	*83%*	**20,199**	4,695	*23%*	**30,318**	87	*0%*
Blantyre	**83,066**	65,995	*79%*	56,285	*68%*	**43,111**	6,347	*15%*	**64,708**	9,796	*15%*
Mwanza	**5,646**	5,598	*99%*	0	*0%*	**2,930**	1,896	*65%*	**4,398**	2,406	*55%*
Thyolo	**51,000**	49,078	*96%*	40,067	*79%*	**26,469**	5,871	*22%*	**39,729**	1,788	*4%*
Chikwawa	**25,512**	24,201	*95%*	0	*0%*	**13,241**	1,766	*13%*	**19,874**	1,057	*5%*
Nsanje	**20,049**	19,459	*97%*	0	*0%*	**10,405**	801	*8%*	**15,618**	1,107	*7%*
Neno	**8,107**	8,068	*100%*	0	*0%*	**4,208**	1,624	*39%*	**6,315**	3,306	*52%*
South East Zone	**224,934**	209,900	*93%*	32,145	*14%*	**116,741**	30,016	*26%*	**175,224**	29,982	*17%*
Mangochi	**47,539**	46,889	*99%*	0	*0%*	**24,673**	6,884	*28%*	**37,033**	9,567	*26%*
Machinga	**28,150**	26,324	*94%*	0	*0%*	**14,610**	5,977	*41%*	**21,929**	3,300	*15%*
Zomba	**50,518**	43,338	*86%*	32,145	*64%*	**26,219**	9,854	*38%*	**39,354**	7,492	*19%*
Mulanje	**49,196**	44,869	*91%*	0	*0%*	**25,533**	3,204	*13%*	**38,324**	6,793	*18%*
Phalombe	**29,548**	29,339	*99%*	0	*0%*	**15,335**	2,215	*14%*	**23,018**	71	*0%*
Balaka	**19,983**	19,140	*96%*	0	*0%*	**10,371**	1,882	*18%*	**15,567**	2,759	*18%*

* Given FP: Number of women (18-49 years) on ART who received a modern family planning method from their ART clinic in the reporting period.
** BP screened: Number of adults (30 years +) who had at least one blood pressure reading recorded on their patient card this calendar year.

8.5 Intensified TB Case Finding (ICF)

TB is one of the most important HIV-related diseases in Malawi and a considerable proportion of (mainly early) deaths on ART are attributed to undiagnosed TB. ICF is carried out using a standard symptom checklist at every HIV patient visit. ICF outcomes are documented on HIV exposed child, pre-ART and ART patient cards, but routine M&E reporting is currently limited to ART patients in order to reduce the burden of reporting secondary cohort outcomes. It is assumed that implementation of ICF is similar in pre-ART and exposed child follow-up.

731,299 (99%) of all patients retained on ART were screened for TB at their last visit before end of December 2017. Out of these, **11,981 (2%)** patients were classified as new TB suspects. **2,049 (<1%)** patients were confirmed to have TB (clinical or lab based) and **1,749 (85%)** of these were on TB treatment; the remaining **300** had either not yet started or interrupted TB treatment. An excerpt from the data in the **Annex** (*Cumulative ART outcomes*) is shown below.

ART outcomes *

Current TB status among ART patients (ICF)

ICF not done (Current TB status unknown/ not circ)		9,290	1%
ICF done		731,299	99%
	TB not suspected	717,269	98%
	TB suspected	11,981	2%
	TB confirmed	2,049	0%
		TB confirmed, not on treatment	300	15%
		TB confirmed, on TB treatment	1,749	85%

9 HIV-Related Diseases

Table 9 shows the number of patients treated for key HIV-related indicator diseases. **3,853** patients were started on TB treatment this quarter and HIV status was ascertained for **3,742 (97%)**. **1,866 (50%)** of these were HIV positive and **1,741 (93%)** of all HIV positives were already on ART when starting TB treatment. In Q4 2017, **360** and **915** patients received Diflucan for acute cryptococcal meningitis and oesophageal candidiasis, respectively. **145** patients with Kaposi sarcoma were registered for ART in this quarter.

Table 9

Number new cases of key HIV-related diseases registered per quarter (KS = Kaposi Sarcoma, CM = cryptococcal meningitis, OC = oesophageal candidiasis).

	TB				KS *	CM *	OC *
	Tot. cases	HIV status asc.	HIV positive	Already on ART	Tot. cases	Tot. cases	Tot. cases
2017 Q1	4,126	3,963 *96%*	1,997 *50%*	1,866 *93%*	269	753	891
2017 Q2	4,146	4,000 *96%*	1,975 *49%*	1,819 *92%*	187	641	986
2017 Q3	4,280	4,175 *98%*	2,137 *51%*	1,956 *92%*	122	649	862
2017 Q4	3,853	3,742 *97%*	1,866 *50%*	1,741 *93%*	145	360	915

10 HIV-Exposed Child Follow-Up

10.1 Methods and Definition of Indicators

There are multiple entry points into HIV exposed child follow up: children of HIV infected mothers may be enrolled at birth at maternity / postnatal ward; they may be found at Under 1 or Under 5 Clinics through active screening for HIV exposure; they may be identified when presenting sick to OPD; or they may be seen with their mothers in ART follow-up. Although the targeted enrolment age is below 2 months, children may theoretically be enrolled up to 23 months of age (when HIV infection can be ruled out by rapid antibody test and breast milk exposure is likely to have stopped).

Initial registration data and details for every visit are recorded on an *Exposed Child Patient Card* and a subset of the registration data is copied in the *HIV Care Clinic (HCC) register* (one record per patient). Registration data are reported from the HCC register on a quarterly basis. Follow-up outcomes are reported monthly, selecting children who were **2, 12 and 24 months** old in the respective reporting month. Outcomes are determined from the latest visit details recorded on each card. HIV infection status is evaluated as ***known negative*** if a negative DNA-PCR or rapid test result was available at the last visit; HIV infection status is evaluated as ***known positive*** if a positive DNA-PCR result was available at any age or a positive rapid antibody test was available from age 12 months; HIV infection status is counted as ***unknown*** if HIV infection has not been confirmed and/or a negative test result pre-dated the last visit (assuming on-going HIV exposure through breast milk). All children under 24 months with confirmed HIV infection and those under 12 months with confirmed HIV infection through DNA-PCR or HIV antibody and symptoms of *presumed severe HIV disease* are ***eligible for ART***.

The main outcome indicator for the HIV exposed child follow-up program is ***HIV-free survival at 24 months of age***. This is defined as the proportion of children who were discharged as confirmed HIV uninfected by the age of 24 months.

10.2 HIV Exposed Child Registration Data

12,695 HIV exposed children were newly enrolled into follow-up during Q4 2017; **12,661 (>99%)** of these were under the age of 2 months. The total number of new enrolments (12,695) exceeds by 3,555 (38%) the total number of known HIV exposed children discharged from maternity (9,410). This apparent discrepancy may be explained by delayed enrolment of infants born in previous quarters; by double-counting of infants who transferred between sites; or by identification and enrolment of additional HIV exposed infants after birth. Overall, enrolment into follow-up for known HIV exposed infants appears to be almost complete.

The documentation of follow-up outcomes, particularly the updating of DNA-PCR results on patient cards, remained incomplete at several sites. This has led to an underreporting of ascertainment of HIV status among the 2-month old cohort.

10.3 Birth Cohort Outcomes

There were **10,707** infants in the **2-month age cohort**. **7,582 (71%)** had received a DNA-PCR result. **66 (1%)** of these were confirmed HIV infected. An additional **42** infants were diagnosed with *presumed severe HIV disease,* which means that a total of **108** infants were eligible for

ART. **60 (56%)** of these had started ART. This is a decrease from the previous quarter (71%). Out of the entire 2-month age cohort, **9,494 (93%)** were retained in exposed child follow-up, **60 (1%)** had started ART and **16 (<1%)** were discharged confirmed uninfected[8]. **45 (<1%)** were known to have died and **554 (5%)** had been lost to follow-up.

There were **10,713** children in the **12-month age cohort**. Current HIV infection status was known for **7,861 (73%)** children (DNA-PCR or rapid antibody test) and **188 (2%)** of these were confirmed HIV infected. **2 (<1%)** additional children had been diagnosed with *presumed severe HIV disease,* which means that a total of **190** children were eligible for ART. **185 (97%)** had started ART. The proportion of positives starting ART was higher than in the previous quarter (93%). Out of the entire age cohort, **8,209 (82%)** were retained in exposed child follow-up, **185 (2%)** had started ART and **41 (<1%)** were discharged confirmed uninfected.[8] **1,443 (14%)** were lost to follow-up and **90 (1%)** were known to have died.

There were **10,149** children in the **24-month age cohort**. Current HIV infection status was known for **6,919 (68%)** children (DNA-PCR or rapid antibody test) and **255 (4%)** of these were confirmed HIV infected. **15** additional children had been diagnosed with *presumed severe HIV disease,* which means that a total of **270** children were eligible for ART. **239 (89%)** of these had started ART. Out of the entire age cohort, **475 (5%)** were retained in exposed child follow-up, **239 (3%)** had started ART and **6,398 (67%)** were discharged confirmed uninfected. **2,269 (24%)** were lost to follow-up and **153 (2%)** were known to have died.

Confirmed HIV-free survival at age 24 months in this quarter remained implausibly low at **67%.** This was related to the fact that only 68% in this cohort had a known HIV status. 3,230 (32%) children were classified as '*current HIV infection status unknown'* and many of these may be among the 2,269 children lost to follow-up and the 153 children who had died. Only 475 (5%) were retained in follow-up beyond age 24 months and a final rapid test was not available for these children, possibly due to continued breast feeding. Although much progress has been made, there are still problems with scheduled HIV testing (and documentation of test results) at 6 weeks, 12 and 24 months of age.

11 PMTCT / ART

The implementation of ***PMTCT Option B+*** effectively integrated PMTCT and ART services already in 2011. ART may be started and continued at ANC, labour and delivery, and at ART clinics. All infants born to HIV-infected women are supposed to start daily nevirapine prophylaxis for the first 6 weeks of life. Nevirapine syrup is given to women at ANC at the earliest opportunity to take home with instructions how to give it to the new-born.

11.1 Data Sources and Reporting Methods

New standard M&E tools for ANC and maternity were implemented in January 2010 and revised in Q2 2012 to reflect the Option B+ policy. ANC and maternity clinic registers and reporting forms include patient management information and all relevant data elements for the maternal and child health and HIV programs. The ANC register was specifically designed

[8] A small number of children may be rightfully discharged as 'confirmed uninfected' by 2 or 12 months of age, provided that HIV exposure through breast milk has definitely stopped (e.g. maternal death) and a negative HIV test was obtained at least 6 weeks thereafter.

to avoid data duplication that previously affected PMTCT reports from ANC due to the inability to account for individual women's outcomes in the course of multiple visits. The cohort reporting system is designed to aggregate women's outcome data after they have completed their ANC visits. The outcome report is completed for women who started ANC 6 months before the reporting period.

From **Q2 2015**, the PMTCT data elements (HIV ascertainment and ART status) were also added to the first section of ANC reporting form that captures women's status at their first (booking) visit. The ANC report now includes the HIV and ART status at the first visit for women starting ANC in the reporting period and the final HIV and ART status of women who had completed ANC by the end of the reporting period. This addition aims to monitor PMTCT service implementation more closely in time, allowing for corrective action in the course of subsequent visits.

Data from ANC and maternity are collated and presented separately because records do not allow identification of individual women and hence are subject to double counting if not separated.

All patients starting ART are recorded using standard program monitoring tools (ART patient treatment cards and ART clinic registers). **ART baseline data** for all patients registered are reported each quarter from ART clinic registers. **ART outcomes** of all patients ever registered are reported after reviewing the cards of all new patients and of those who were on ART at the end of the previous quarter, updating the status of patients who have subsequently died, stopped or been lost to follow-up. Secondary outcomes such as current regimen, CPT status, side effects, adherence and TB status are reported for all patients retained on ART.

ART scale-up has resulted in a growing proportion of HIV-infected women who are already on ART when getting pregnant. Implementation of *Test & Treat* will further increase ART coverage in this group. **Maternal ART coverage** is estimated from the number of pregnant women who were already on ART when getting pregnant (**maternity reports**) ***plus*** those who newly started ART when pregnant (**ART reports**).

Maternity reports capture ART status at the time of delivery (up to the time of discharge from the postnatal ward). The timing of ART initiation is categorized into: (any time) before pregnancy; during 1st / 2nd trimester; during 3rd trimester; during labour. About 97% of pregnant women in Malawi attend ANC, but only 83% of women in the general population deliver at a health facility in Malawi. Maternity reports therefore have the potential for undercounting the number of mothers and infants receiving ARVs. However, there is evidence from ANC and maternity reports that almost all of the known HIV infected women deliver at health facilities. ART coverage among known positives is therefore reliably calculated from maternity reports. Women admitted at maternity who are referred to another facility before / after delivery are double-counted in aggregated maternity data. Assuming the probability of referral is independent of ART status, the number of women already on ART when getting pregnant is therefore **adjusted** by the overall proportion of referrals among women admitted to maternity.

ART program reports capture pregnancy (and breastfeeding) status at the time of *ART initiation*, providing information on the number of new women starting ART while pregnant

(or while breastfeeding). ART reports do not capture women who become pregnant after starting ART. For the estimation of maternal ART coverage, the number of women starting ART in pregnancy is **adjusted for:**

a) Double-counting of women starting ART in pregnancy and subsequently transferring to another site. These women are counted multiple times as 'pregnant at the time of starting ART' in the quarterly ART cohort reports because the disaggregation of age, sex and reason for starting ART applies to all patients newly registered in the quarter, including transfers in. Separate *ART 'survival' analyses* are collected each quarter for women started under Option B+. The proportion of women transferred within 12 months of registration is used to adjust the quarterly number of pregnant women starting ART for transfers.

b) *Failed ART initiation* is thought to be the main underlying reason for early loss to follow-up among the Option B+ cohort. Patients are recorded on patient cards and in clinic registers when the first supply of ARVs is dispensed and all new entrants are counted as ART initiations in the quarterly ART cohort report. Recent operational studies indicate that most pregnant women lost to follow-up within the first 6 months never return after this first dispensing visit and many of these may have never actually started taking ART. The proportion of women lost to follow-up in the 6-month survival analysis is therefore used to adjust the number of pregnant women starting ART in the quarterly ART cohort reports for *failed initiations.*

Infant PMTCT coverage is estimated from maternity reports, based on the number of infants born to known HIV-infected women and discharged alive who started nevirapine prophylaxis.

Coverage is calculated by dividing the number of patients served by population denominators. The denominators are derived from expected pregnancies based on population projections and HIV prevalence from epidemiological surveillance (source: 2018 Spectrum model for Malawi). There are an estimated 13,700 HIV infected pregnant women in the population per quarter (1/4 of 54,800 in 2017).[9]

11.2 ARV Coverage among Pregnant / Breastfeeding Women and Exposed Infants

12,472 (91%) of the estimated 13,700 HIV infected pregnant women in Malawi this quarter were on ART. This is based on **8,342** [10] women at maternity who were already on ART when getting pregnant and **4,130** [11] women who newly initiated ART in pregnancy. ART coverage in the previous quarter was also 91%.

[9] 2018 Spectrum model estimates for HIV infected pregnant women in 2017.

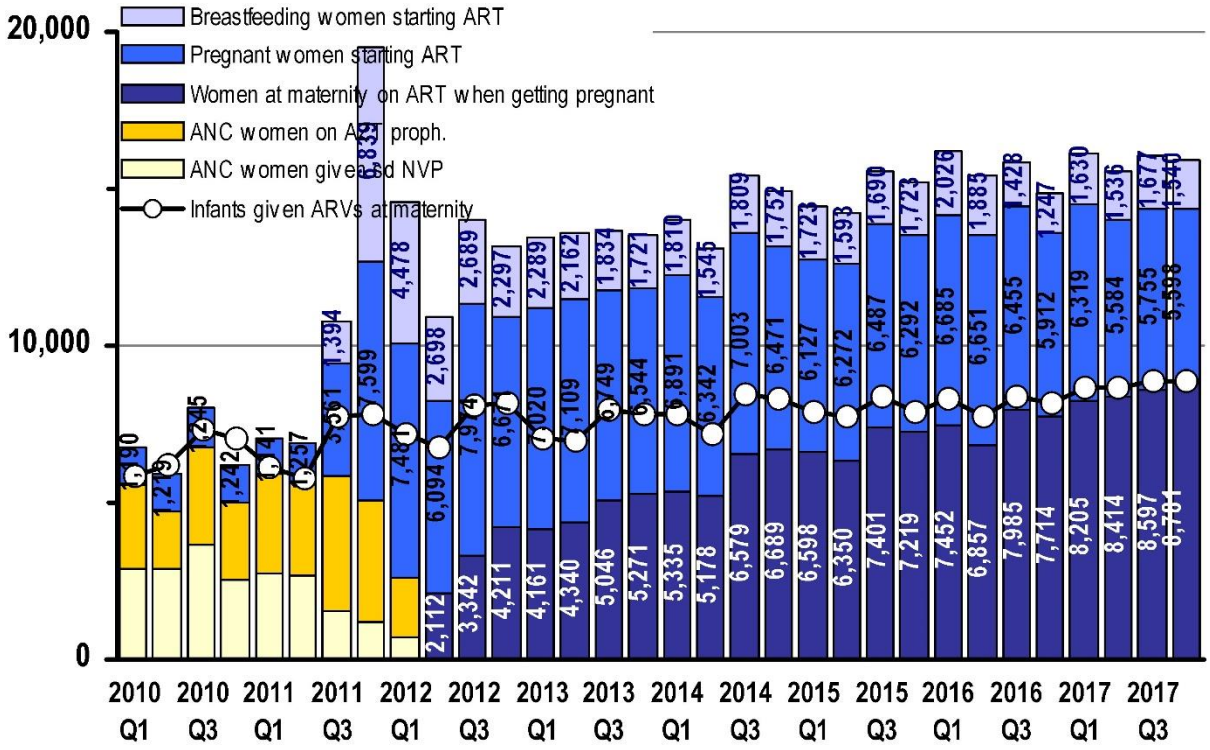
[10] 8,781 women who started ART before pregnancy admitted at maternity; reduced by 5% to adjust for double-counting of 7,485 referrals among 141,431 total admissions.

[11] 5,598 women registered at ART clinics who were pregnant at the time of starting ART; a) 11% are discounted to adjust for double-counting of transfers based on 844 of 7,883 women who transferred within 12 months of registration (12-month Option B+ survival analysis); b) 17.1% are discounted to account for presumed failed ART initiations based on 1,123 of 6,564 women lost to follow-up within 6 months of registration (6-month Option B+ survival analysis).

An additional **1,371** [12] breastfeeding women started ART while breastfeeding (in WHO clinical stage 1 or 2), bringing the total number newly started on ART while pregnant or breastfeeding to **5,500**. Most women starting ART while breastfeeding were probably identified late in maternity or early in the postnatal period, but this group may also include some women who re-initiated after interrupting ART in pregnancy. **8,872** infants were confirmed to have started NVP prophylaxis at maternity.

Figure 6 shows the transition from prophylactic ARV regimens for HIV infected mothers to universal ART under ***Option B+*** which has now been superseded by universal ART (registration data; not adjusted as above). The (less effective) single dose NVP regimen and AZT combination prophylaxis had been phased out by April 2012. The average number of pregnant women registered for ART each quarter **increased almost 6-fold** from **1,221** in the 12-month period before introduction of Option B+ to an average of around **6,500** since Q4 2011.

Figure 6
Transition from prophylactic ARV regimens for PMTCT to Option B+ in Malawi
Women who moved to Option B+ from sdNVP / AZT were double counted between Q3 2011 - Q1 2012. It is likely that <12,000 total women were on ARVs during these quarters. Data on women already on ART when getting pregnant are only available from Q2 2012.



11.3 HIV Services at ANC

The full national data from ANC are presented in the **Appendix**.

[12] 1,540 women registered at ART clinics who were breastfeeding at the time of starting ART; reduced by 11% to adjust for double-counting of transfers based on 844 of 7,883 women who transferred within 12 months of registration (12-month Option B+ survival analysis). Failed ART initiations are thought to be less common among this group, so no further adjustment is made.

11.3.1 HIV Ascertainment and ART Coverage

Booking cohort:

159,785 women attended ANC for their first visit between October and December 2017. This is >99% of the estimated 160,500 pregnant women in the 2017 population during one quarter.[13] **154,215 (97%)** of women in this cohort had their HIV status ascertained at the first visit. Out of these, **11,303 (7%)** presented with a valid previous test result and **142,912 (93%)** received a new test. A total of **10,842 (7%)** of women were found HIV positive: **7,066 (65%)** of these from a documented previous test and **3,776 (35%)** from a new test. **10,653 (98%)** of all positives were on ART: **6,954 (65%)** of these were already on ART when starting ANC and **3,699 (34%)** newly started ART at their first ANC visit. Out of these, **3,220 (87%)** were in their 1st or 2nd trimester and **479 (13%)** were in the 3rd trimester of pregnancy.

Outcome cohort:

150,893 women had started ANC between April and June 2017 and their outcomes were reported between October and December 2017. Only **41,411 (27%)** of women in this cohort attended the recommended minimum of 4 focussed ANC visits.

146,974 (97%) of the outcome cohort had their HIV status ascertained at least once in the course of ANC. This is similar to the previous quarter (97%). **10,817 (7%)** presented with a valid documented previous HIV test result and **136,157 (93 %)** received a new HIV test result at ANC. A total of **11,173 (7.6%)** women were found HIV positive. This is slightly lower than the latest Spectrum projections (8.5% HIV prevalence among pregnant women in 2017).[9]

10,998 (96%) of (known) HIV infected women were on ART by the end of ANC. This represents **80%** coverage of the estimated 13,700 HIV positive pregnant women per quarter at the population level. Of the **10,998** ANC women who were known to receive ART, **6,900 (63%)** were already on ART when starting ANC, **3,494 (32%)** initiated before 28 weeks of pregnancy and **604 (5%)** initiated during the last trimester of pregnancy. **10,722 (96%)** of HIV infected women at ANC were on Cotrimoxazole Preventive Therapy. **10,323 (92%)** of known HIV infected women attending ANC received the infant dose of ARVs (nevirapine syrup) to take home.

11.3.2 Syphilis Screening

126,208 (84%) of women in the outcome cohort were tested for syphilis and **1,500 (1%)** were syphilis positive. The syphilis testing rate has improved considerably over the last few quarters and the proportion of positive syphilis test results is consistent with syphilis prevalence estimated from the 2010 ANC sentinel surveillance round.

11.4 HIV Services at Maternity

The full national data from maternity are presented in the **Appendix**.

Between October and December 2017, **133,993** women were admitted for delivery to maternity; **7,486** of these were referred to another facility before delivery, resulting in **141,479** total admissions to maternity during Q4 2017. Out of all admissions, **131,881 (96%)**

[13] Estimated as ¼ of 642,000 births projected for 2017 (Demographic Proj Spectrum 2018).

delivered at health facilities, while **5,149 (4%)** had already delivered before reaching a facility. The **131,881** facility deliveries represent **82%** of the estimated 160,500 quarterly deliveries in the population in 2017. This is considerably less than the 91% reported in the 2015-2016 Malawi DHS.[14]

A total of **129,364 (96%)** deliveries were conducted by skilled birth attendants, **231(<1%)** by paramedical staff and **4,950 (4%)** were not attended by any of the above (probably mainly among women who delivered before reaching maternity). **17,240 (12%)** of women developed obstetric complications. The most common leading complications were obstructed / prolonged labour (**5,725** cases) and post-partum haemorrhage (**1,875** cases). A total of **137,030** babies were born, **132,531 (97%)** were singletons and **4,499 (3%)** were twins/multiples. There were **134,616 (98%)** live births and **2,414(2%)** stillbirths. **133,582 (99%)** of babies born alive were discharged alive and **1,034 (1%)** died before discharge. **134,512 (>99%)** of women were discharged alive and **81 (<1%)** women died before discharge, which is equivalent to a maternal mortality ratio of **60 per 100,000** live births among women attending maternity.

11.4.1 HIV Ascertainment at Maternity

140,583 (99%) women had their HIV status ascertained at maternity. Out of these, **117,426 (84%)** presented with a valid previous HIV test result and **23,157 (14%)** received a new test. A total of **9,993 (7%)** women were HIV positive and **130,590 (93%)** were negative. The **140,583** women whose HIV status was ascertained at maternity represent **84%** of the expected 160,500 women delivering in the population.

HIV exposure status was ascertained for **132,520 (99%)** out of 133,582 babies born and discharged alive. **9,388 (7%)** of these were born to a known HIV positive mother.

11.4.2 ARV Coverage at Maternity

A total of **9,906 (99%)** of known HIV infected women admitted to maternity received ART. Out of these, **8,781 (89%)** had started ART before pregnancy, **679(7%)** initiated ART during the 1st or 2nd trimester, **327 (3%)** initiated during the 3rd trimester and **119 (2%)** initiated ART at maternity.

A total of **8,870 (94%)** of 9,388 infants who were known HIV exposed and discharged alive started daily NVP prophylaxis at maternity. This represents **65%** coverage of the estimated 13,700 HIV exposed infants born in the population in this quarter.

12 ART Access and Follow-Up Outcomes

The full national data from the ART Program are shown in the **Appendix**.

[14] National Statistical Office (NSO) [Malawi] and ICF International. 2016. Malawi Demographic and Health Survey 2015-16: Key Indicators Report. Zomba, Malawi, and Rockville, Maryland, USA. NSO and ICF International.

12.1 New ART Registrations during Q4 2017

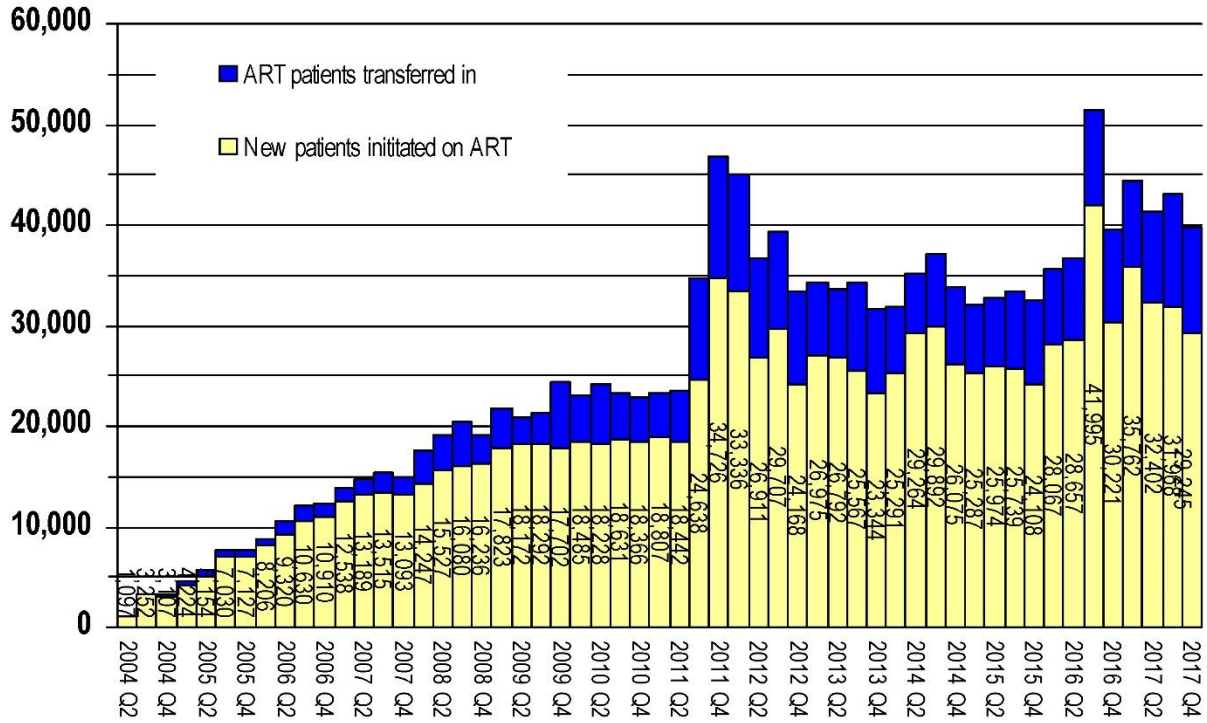
By the end of December 2017, there were 737 static ART sites in Malawi. 63% of these sites were managed by government, 20% by CHAM, 5% by NGOs and 13% were private sector clinics that charge a nominal fee of MK500 per monthly prescription of drugs per patient.

Implementation of the Malawi Integrated Clinical HIV Guidelines, which adopted Option B+, started in July 2011, triggering a massive surge in new ART initiations (see **Figure 7**). The new policy for universal ART eligibility ("**Test & Treat**") was introduced in **May 2016**. This policy has led to an unprecedented increase in ART initiations in Q3 2016 when almost all remaining pre-ART patients initiated ART.

A total of **29,245** patients initiated ART for the first time in Q4 2017. The total number of patients newly initiated on ART represents 91% of the 32,052 people newly diagnosed with HIV during the quarter.

Among all new ART clinic registrations[15] in Q4 2017, **39%** were males and **61%** were females. **5,598 (23%)** of the registered females were pregnant at the time of starting ART.

Figure 7
Patients newly inititated on ART and total ART clinic registrations per quarter
Total ART clinic registrations include patients who transferred between sites. This results in double counting of patients at the national level. For 'patients newly initiated on ART' every patient is only counted once.



[15] These proportions include the 35,768 patients newly initiating ART, but also 8,109 patients previously started on ART who transferred between sites and 612 patients who re-initiated ART after treatment interruption.

A total of **33,842 (85%)** of all patients registered started in WHO stage 1 or 2 and **24,374 (75%)** of these started as 'asymptomatic' under universal ART eligibility policy. **4,670 (12%)** of patients registered started in WHO stage 3 and **1,244 (3%)** started in stage 4.

2,980 children were registered at ART sites in Q4 2017. **752 (25%)** of these were children aged 12-59 months in WHO stage 1 or 2. **72 (2%)** children started ART with presumed severe HIV disease. This is lower than previous quarter (76%). **130** infants in WHO stage 1 or 2 started due to confirmed HIV infection through DNA-PCR. Early infant treatment has remained at about half of the estimated infected infants seen at maternity: considering that 9,410 HIV exposed infants were identified at maternity and assuming a 2% transmission rate among the 94% of HIV positive mothers at maternity who received ART (and 20% transmission in the 6% who did not receive ART)[16], only about 285 of these known HIV exposed infants may have been infected perinatally during Q4 2017. However, considering the projected 725 new infant HIV infections in the 2017 population per quarter[9], early infant treatment coverage remains low at an estimated **39%** (285 / 725). The most significant bottleneck for early infant treatment remains the identification of HIV infected pregnant / breastfeeding women.

573 (1%) out of all ART clinic registrations were patients with TB: **268 (<1%)** had a current and **305 (<1%)** a recent history of TB. **145 (<1%)** of patients registered had Kaposi's sarcoma.

12.2 Cumulative ART Registrations up to December 2017

By the end of December 2017, there were a cumulative total of **1,427,752** clinic registrations, **1,131,616 (79%)** of whom were patients classified as newly initiated on ART; **269,323 (19%)** were patients who transferred between clinics; **26,813 (2%)** re-initiated ART after treatment interruption. Out of all registrations, **37**% were males and **63**% were females, **91**% were adults and **9**% were children (<15 years).

12.3 ART Outcomes

745,532 patients were alive on ART by the end of December 2017. This is equivalent to **71% ART coverage** among the estimated 1,051,000 HIV positive population in Malawi in 2017 and it means that the national ART coverage target for December 2017 (72%) has been met. The number of patients on ART includes an estimated 4,943 patients in transit between sites (given the standard 3 month dispensing interval, 50% of the 9,885 patients newly registered as transferred out at sites across the country are assumed to be in transit at the end of the quarter).

Documentation of ART outcomes was incomplete at many facilities with electronic medical record systems (EMR) due to prolonged downtime caused by national power outages this quarter. Patients with missing ARV dispensing records are automatically classified as lost to follow-up by the EMR. The loss to follow-up rate at 37 (35%) of 107 EMR sites showed a gross departure from past trends and adjusted cohort reports were therefore derived from projected data.

[16] UNAIDS Reference Group on Estimates Modelling and Projections (2011). Working paper on mother-to-child-transmission rates for use in Spectrum. Geneva, UNAIDS.

Out of the **1,131,616** patients ever initiated on ART, **745,532 (66%)** were retained alive on ART, **102,350 (9%)** were known to have died, **299,881 (26%)** were lost to follow-up and **5,567 (<1%)** were known to have stopped ART.

An estimated **700,360** adults and **45,172** children (<15 years)[17] were alive on ART by the end of December 2017. This represents **65%** (45,172 / 70,000) and **71%** (700,360 / 981,000) ART coverage among children and adults, respectively.

Figure 8: Patients alive on ART at the end of each quarter, stratified by size of facility (number of patients alive on ART)

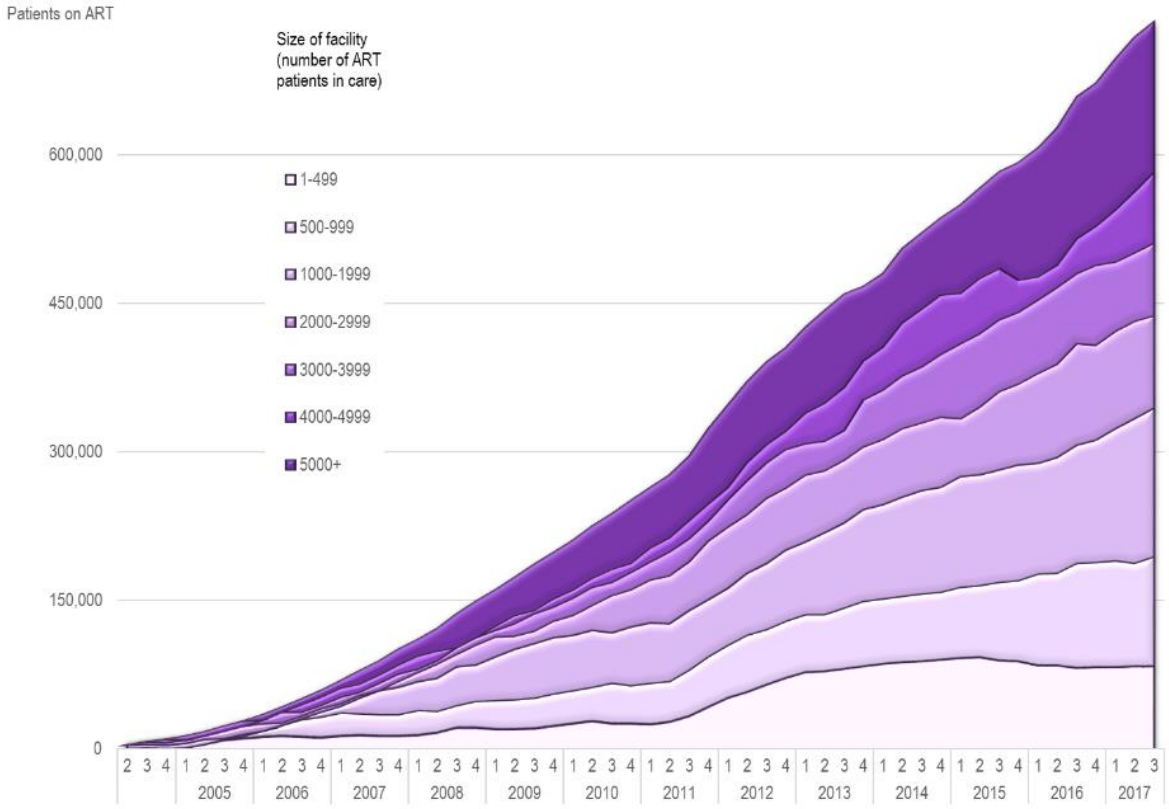


Figure 8 shows the increase of patients alive on ART by the end of each quarter, stratified by facility volume. There was a net increase of **13,553** patients alive on ART between October and December 2017. **Figure 8** also shows the decentralization of Malawi's ART program that followed the opening of over 300 new ART sites with the introduction of Option B+ in Q3 2011. During 2012 and 2013, the greatest increase in ART patient numbers was seen at sites with fewer than 500 patients alive on ART. However, patient numbers at the high and ultra-high burden sites have continued to increase considerably in the more recent quarters. By the end of December 2017, **46%** of the national ART patient cohort was in care at sites with fewer than 2,000 patients.

[17] The total national number of ART patients with current age <15 years is extrapolated from the 22,641 (6.1%) of 373,676 patients at EMR sites who were <15 years at the end of Q4 2017.

Figure 9
Quarterly rates of ART drop out (ART stop, defaulters and deaths)

Numerator: new ART stops, new defaulters and new deaths in the respective quarter
Denominator: total patients retained alive at the end of the previous quarter plus new patients registered in the respective quarter)

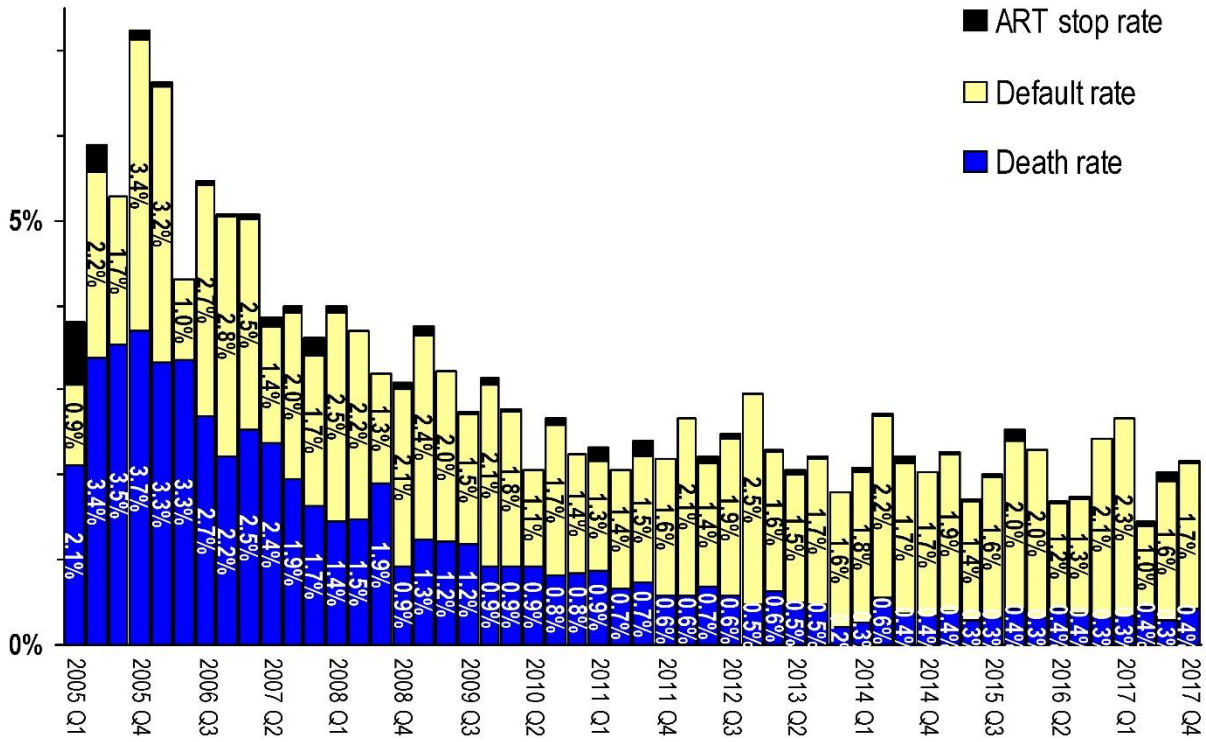


Figure 9 shows the considerable decrease of ART drop-out rates since the start of the national program most of which was contributed by reduction in mortality. Quarterly defaulter rates have stabilized around 1.8% over the last 5 years. Loss to follow-up ('defaulters') include undocumented 'silent' transfers, undocumented mortality or people actually stopping treatment. Efforts to harmonize strategies for patient retention are currently ongoing, including national standard operating procedures (SOPs) and tools for linkage and retention aiming to better track patients who miss appointment and document outcomes.

There were **3,157** new deaths, **13,012** new defaulters and **180** new stops in Q4 2017. This translates into a quarterly death rate of **0.4%** and a defaulter rate of **1.7%** among the patients alive and on treatment in this quarter.

Figure 10

Patients starting ART in WHO stage 4 and deaths in the first 3 months after ART initiation. (Shown as proportions among new patients registered each quarter)

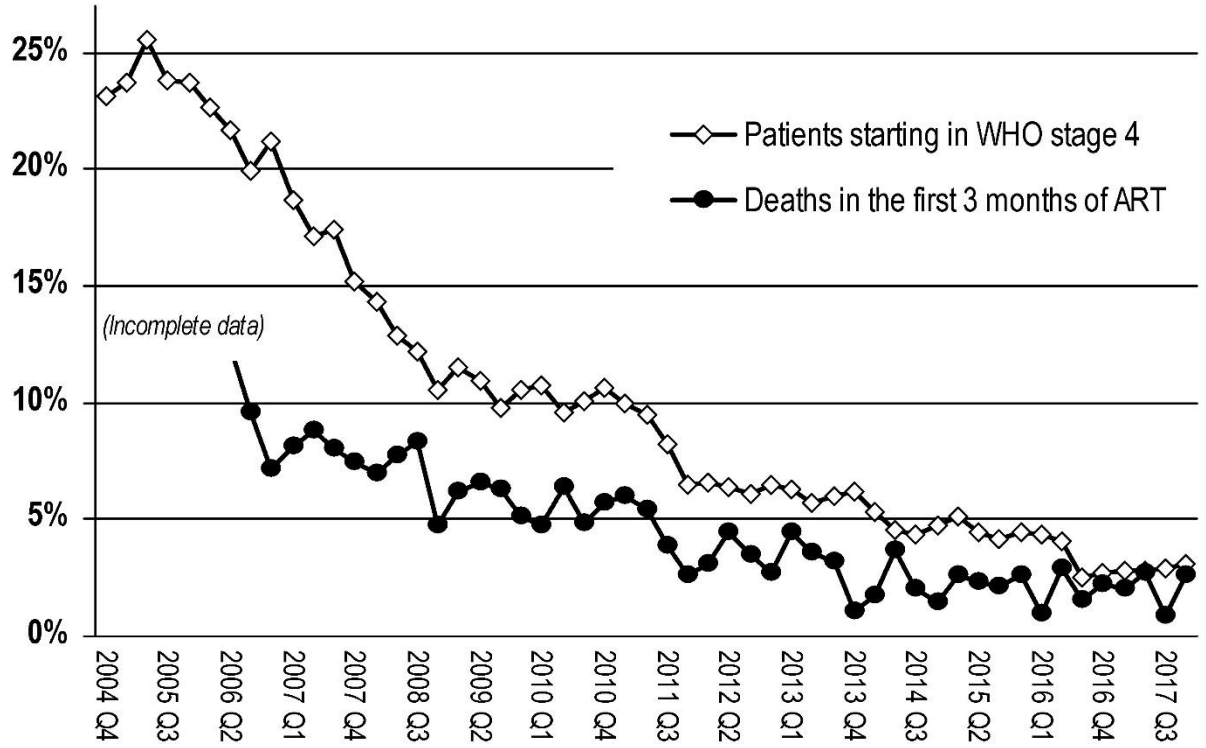


Figure 10 shows the considerable decline in **early mortality** since the start of the program. In Q2 2006, 22% of patients started ART in WHO stage 4 and 12% of all new patients died within the first 3 months of ART. Early mortality on ART has since declined significantly as patients were diagnosed and started on ART in less advanced stages of HIV infection. In the past 5 years, early mortality has consistently been below 5% and seems to have stabilized around 2.5%. The test and treat policy for all may result in a further decline in early mortality.

12.4 ART Cohort Survival Analysis

A 12, 24, 36, 48, 60, 72, 84 and 96-month **'cohort outcome survival analysis'** was conducted for patients registered in Q4 of 2009 to 2016, respectively. A separate 12-month cohort outcome analysis was conducted for children who were under 15 years at the time of ART initiation and who registered for ART in Q2 2017. A further subgroup analysis was done for women who started ART under ***Option B+*** in Q4 of 2013, 2014, 2015 and Q2 of 2017. A bug in the electronic medical records affected reporting of option B+ cohort survival analysis. Patients that initiated because of other reasons were included in the option B+ cohort survival analysis. Some EDS facilities are excluded from the option B+ survival analysis.

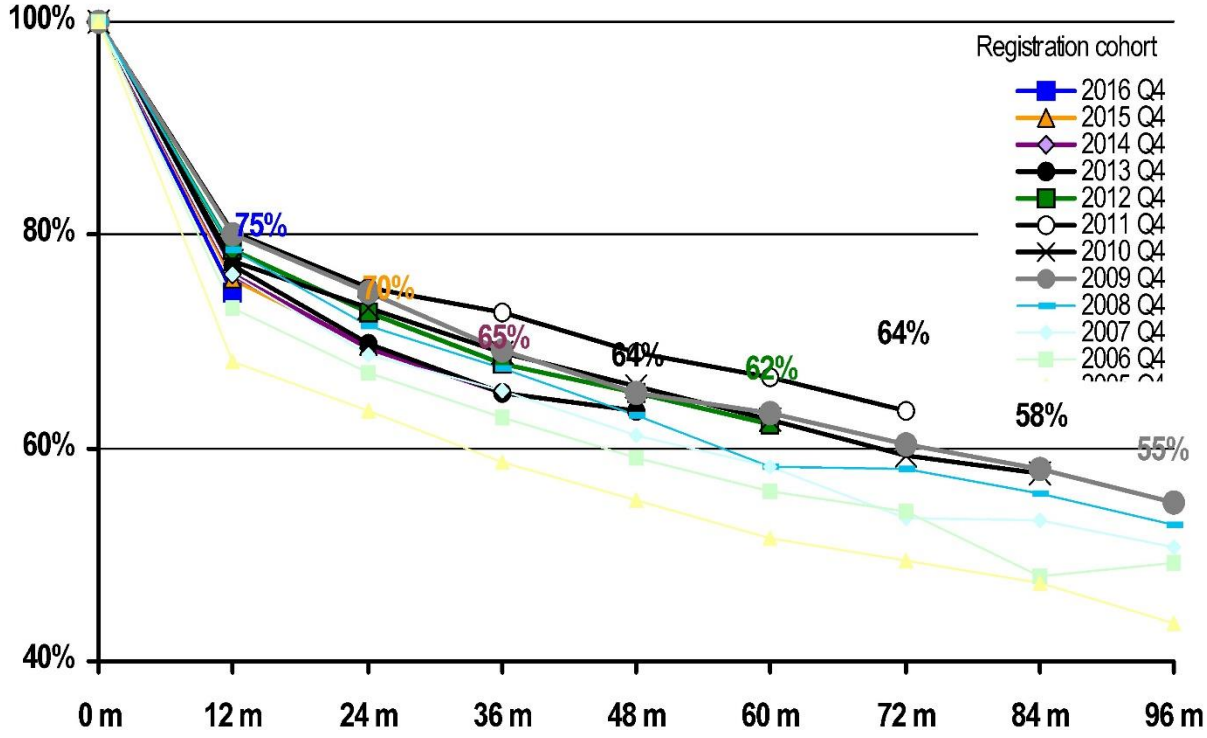
72% of adults and **75% of children** were retained alive on ART after 12 months on treatment. This is lower than previous quarter for both adults and children (79%). The lower retention rate is likely due to downtime in EMR facilities that affected documentation. These programmatic monitoring results remain below the WHO target of 85%, but actual retention rates are thought to be about **10%** higher due to this misclassification of 'silent transfers' as 'defaulters' in clinic-based survival/retention analysis. A population-based study in Karonga

district with individual linkage showed that **92%** of patients started in 2011-2012 were retained after 12 months on ART while routine monitoring data showed **79%** retention rates for the same period.[18]

Figure shows the continuous improvement of long-term treatment outcomes over time. However, contrary to expectations, 12-month retention for the 2015 and 2016 cohorts was similar to the cohorts initiated in 2010, 2011 and 2012. This is probably largely explained by an increase in 'silent transfers' due to the ongoing decentralization of ART services in Malawi.

Figure 11

Group cohort survival analysis: Proportion of patients retained alive on ART 12, 24, 36, 48, 60, 72, 84 and 96 months after ART initiation



6-month group cohort survival outcomes were known for **7,056** women registered as having started ART under Option B+ in Q2 2017. This exceeds by 30 (<1%) the number of women registered under Option B+ in the quarterly cohort analysis in Q2 2017. This discrepancy is likely due to errors in data abstraction.[19] The 7,056 women in this cohort survival analysis include 492 (7%) women who transferred between sites. These transfers are double counted and discounted from the denominator (6,564) for the calculation of retention rates.

[18] Koole, O., Houben, R. M. G. J., Mzembe, T., Van Boeckel, T. P., Kayange, M., Jahn, A., Crampin, A. C. (2014). Improved retention of patients starting antiretroviral treatment in Karonga District, northern Malawi, 2005-2012. Journal of Acquired Immune Deficiency Syndromes (2014), 67(1), e27–33. doi:10.1097/QAI.0000000000000252

[19] Group cohort survival analyses were not available from some sites with electronic data systems. 'Reason for starting' may be reclassified for some patients, leading to minor inconsistencies in patients included in group cohort survival analyses.

5,307 (81%) women in this cohort were retained at 6 months after registration. Of those not retained, **1,123 (89%)** were lost to follow-up, **46 (1%)** were known to have stopped ART and **88 (7%)** were known to have died.

12-month group cohort survival outcomes were known for **7,883** women registered as having started ART under Option B+ in Q4 2016. This exceeds by 975 (14%) the number of women registered under Option B+ in the quarterly cohort analysis in Q4 2016. This discrepancy is likely due to errors in data abstraction.[20] The 7,883 women in this cohort survival analysis include 844 (11%) women who transferred between sites. These transfers are double counted and discounted from the denominator (7,039) for the calculation of retention rates.

5,136 (73%) of women in this cohort were retained at 12 months after registration. **1,670 (88%)** of those not retained were lost to follow-up, **793 (4%)** were known to have stopped ART and **154 (8%)** were known to have died.

24-month group cohort survival outcomes were known for **8,641** women registered as having started ART under Option B+ in Q4 2015. This exceeds by 634 (8%) the number of women registered under Option B+ in the quarterly cohort analysis in Q4 2015. This discrepancy is likely due to errors in data abstraction.[20] The 8,641 women in this cohort survival analysis include 1,243 (14%) women who transferred between sites. These transfers are double counted and discounted from the denominator (7,398) for the calculation of retention rates.

5,121 (69%) of these were retained at 24 months after registration. **1,977 (87%)** of those not retained were lost to follow-up, **74 (3%)** were known to have stopped ART and **226 (10%)** were known to have died.

Retention after 36 months was **63%**.

1,540 (18%) of the women in the 24-month Option B+ survival cohort had initiated ART in the breastfeeding period and **774 (9%)** started in the third trimester / in labour; considering the 23-month median breastfeeding period in Malawi (2016 MDHS), more than half of the women in this cohort can be assumed to have stopped breastfeeding. The **69% and 63% retention rates at 24 and 36 months** after ART initiation confirms that a high proportion of women started under Option B+ **remain on ART beyond the cessation of breastfeeding**.

The 6-month retention rate was slightly higher than quarters. These are satisfactory results. Most of the women lost to follow-up failed to return after their first visit and many of these may have not actually started ART or started with delay (possibly counted again as started during breastfeeding).

[20] Group cohort survival analyses were not available from some sites with electronic data systems. 'Reason for starting' may be reclassified for some patients, leading to minor inconsistencies in patients included in group cohort survival analyses.

6 month survival OptionB+

Survival and retention in ART program *

ART cohort registration group outcomes

Total ART clinic registrations	7,056	100%
Transfers out (double counted)	492	7%
Total not transferred out (patients in cohort)	6,564	93%
Total alive on ART	5,307	81%
Total not retained	1,257	19%
Defaulted	1,123	89%
Stopped ART	46	4%
Died	88	7%

12 month survival OptionB+

Survival and retention in ART program *

ART cohort registration group outcomes

Total ART clinic registrations	7,883	100%
Transfers out (double counted)	844	11%
Total not transferred out (patients in cohort)	7,039	89%
Total alive on ART	5,136	73%
Total not retained	1,903	27%
Defaulted	1,670	88%
Stopped ART	79	4%
Died	154	8%

24 month survival OptionB+

Survival and retention in ART program *

ART cohort registration group outcomes

Total ART clinic registrations	8,641	100%
Transfers out (double counted)	1,243	14%
Total not transferred out (patients in cohort)	7,398	86%
Total alive on ART	5,121	69%
Total not retained	2,277	31%
Defaulted	1,977	87%
Stopped ART	74	3%
Died	226	10%

36 month survival OptionB+

Survival and retention in ART program *

ART cohort registration group outcomes

Total ART clinic registrations	9,138	100%
Transfers out (double counted)	1,393	15%
Total not transferred out (patients in cohort)	7,745	85%
Total alive on ART	4,879	63%
Total not retained	2,866	37%
Defaulted	2,445	85%
Stopped ART	127	4%
Died	294	10%

12.4.1 Secondary outcomes of patients retained on ART

740,589 patients who were alive on ART and remained at their facilities have documented secondary outcomes.

ART Regimens

724,270 (98%) of patients were on first line regimens. The number of patients on 2nd line ART increased by 1,662 from the previous quarter, reaching **15,014** at the end of Q4. **1,305 (<1%)** patients were on non-standard regimens. Non-standard regimens are not necessarily substandard regimens and include patients continuing an ART regimen that was started outside Malawi, patients in research programmes and patients in specialist care.

Among patients on first line regimens, **26,618 (4%)** were on paediatric formulations and **25,584 (96%)** of these were on the standard first line for children (regimen 2P: AZT/3TC/NVP). The great majority of patients on 1st line ART were on regimen **5A** (tenofovir / lamivudine / efavirenz) or regimen **2A** (zidovudine / lamivudine / nevirapine): **646,635 (93%)** and **35,250 (5%)**, respectively.

Adherence to ART

Facilities are doing very well checking and documenting patient adherence. **716,460 (97%)** of all patients retained in care had documented the number of missed doses at each visit and **584,973 (82%)** of these were classified as >95% adherent.

ART Side Effects

736,070 (99%) patients on ART had information on drug side effects documented at their last clinic visit before end of December 2017. **8,068 (1%)** of patients with information had documented side-effects. The prevalence of side effects seems to have stabilized at very low levels following the full transition to regimen 5A (tenofovir / lamivudine / efavirenz) that started in July 2013.

12.5 Viral Load (VL) Monitoring

Routine VL monitoring for patients on ART was introduced in 2012 and the number of patients receiving VL testing has increased considerably over the last few quarters. The number of VL results produced increased from 69,778 in Q3 to **74,569** in Q4 2017 due to higher outputs in several existing labs and the new PCR-capacity at Nsanje District Hospital. Malawi now has a total of **13** platforms in **10** molecular labs. All labs used the MOH lab information management system (LIMS) for registration of samples and storage of results. The Diagnostics Department is also piloting the use of point-of-care (POC) VL machines at 10 facilities and the validation results are currently being analysed. The POC are not included in this report. The following results are based on an analysis of exported LIMS data.

62,927 VL samples were drawn in the reporting period and documented in the facility sample logbook. **57,105 (91%)** of 62,927 were samples collected for routine/scheduled VL monitoring. **4,540 (7%)** were extra-scheduler and **1,282 (2%)** were replacements of lost samples. **49%** of the extra-scheduled samples were target suspected of clinical failure and **51%** were follow-up after an initial high VL.

64,231 samples were drawn by 624 facilities between April and June 2017. **48,966 (76%)** of 64,231 VL samples drawn were documented in the facility sample logbook and results should be back at the facility at the time of reporting. **19,836 (41%)** of 48,966 sample results were received back at the facility within 4 weeks of sample collection. **39%** were received between 5-8 weeks after sample collection and **9%** between 9-12 weeks. The remaining **12%** either were received after 12 weeks or were still missing. **21%** of the patients were notified within 4 weeks of sample collection, **35%** were notified within 8 weeks and **46%** within 12 weeks. **26,369 (54%)** of 48,966 were either notified after 12 weeks or the notification was still pending. **97%** of the results were printed in the lab and delivered at the facility while **3%** were electronically transmitted to the facility. **44,800 (91%)** of 48,966 samples produced valid VL test results. 340 (<1%) samples were rejected or the results were invalid. Results were outstanding or missing for 3,826 (8%). **37,907 (85%)** of 44,800 samples with VL test results were virally suppressed.

6,947 samples of patients with an initial high VL were drawn between April and June 2017 and were documented in the facility high VL register. **6,064 (87%)** of 6,947 were routine monitoring samples, **413 (6%)** were targeted samples, suspected of failure and **470 (7%)** were repeat samples. **2,855 (41%)** of 6,947 had completed 3 sessions of counselling. **2,605 (37%)** follow-up samples were drawn. **1,717 (66%)** of 2,605 had valid results and **38%** of these were <1000 copies/ml. A final treatment decision was available for **2,091** patients. **1,446 (69%)** were maintained on the current regimen, **560 (27%)** were switched to second line and **85 (4%)** were referred to HIV specialist. The unsatisfactory program performance is likely due to long turnaround time for test results and low patient literacy on the use of VL results. The programming is addressing these challenges and VL monitoring is likely to improve in the coming quarters.

74,569 VL results were dispatched from the labs to **631** sites between October and December 2017. **72** sites accounted for half of all results released this quarter.

63,319 (8%) of 74,569 samples processed were plasma and **68,250 (92%)** were DBS.

Lab	Samples Processed			Turn-around Time (Days)§
	Plasma	DBS	Total	
DREAM Blantyre	1,323	5,166	**6,489**	16
DREAM Balaka	646	5,878	**6,524**	28
Kamuzu CH	3,430	9,028	**12,458**	35
Mzimba DH	0	3,869	**3,869**	18
Mzuzu CH	0	5,575	**5,576**	80
Nsanje DH	0	3,180	**3,180**	24
Partners in Hope	919	8,758	**9,677**	63
QECH	0	8,958	**8,958**	52
Thyolo DH	0	8,131	**8,131**	21
Zomba CH	0	9,707	**9,707**	30
Total	6,318	68,250	**74,569**	**33**
§ Median days between sample collection and printing of results in lab				

Kamuzu CH, Zomba CH, Partners in Hope and Queen Elizabeth CH labs produced 55% of all VL results. The median interval between sample collection and printing of results was **33 days** at the national level, ranging from **16 days** at Dream Blantyre to **80 days** at Mzuzu CH. The most significant delays occurred between sample receipt and process run in the lab (median 17

days), while on average only 7 days elapsed between samples draw and sample receipt in the lab. There is still room for more capacity development at the labs to deal with the high number of samples.

Reason	0-999		1000+		*Total*
Routine	**57,561**	*86%*	**9,576**	*14%*	**67,137**
Targeted	**4,739**	*67%*	**2,382**	*33%*	**7,121**
Other/unk	**164**	*53%*	**147**	*47%*	**311**
Total	**62,464**	*84%*	**11,908**	*16%*	**74,569**

67,137 (90%) of VL results released this quarter were classified as *routine scheduled*[21]. This is **60%** of the estimated 112,000 ART patients passing a VL monitoring milestone this quarter, suggesting that the VL monitoring program is still catching up with patients who have never been tested. **7,121 (10%)** of samples were classified as *targeted (suspected treatment failure / repeat)* and for **311 (<1%)** the reason for the sample was 'other' or not specified. **86% (57,561)** of patients with a routine viral load result this quarter achieved viral suppression (i.e. <1,000 copies/ml). This is very close to the target of 90%.

Viral suppression rates were significantly lower for samples classified as 'routine' among children (0-9 yrs: **51%**) and adolescents (10-19 yrs: **65%**) compared with adults in the age groups 20-29, 30-39, 40+ years who had viral suppression rates of **87%**, **88%** and **90%**, respectively. 90% of routine VL samples were from adults 20+ years. Patient age was not recorded for 6,141 (<1%) of routine samples.

The **7,121** targeted VL results this quarter represent **82%** of the 8,726 routine VL results ≥1000 copies/ml from the previous quarter. Patients with an initial routine VL result ≥1000 copies/ml are supposed to receive a follow-up VL test after 3 months of intensive adherence counseling (upon confirmation of good adherence). However, only 210 samples were marked as *confirmatory (follow-up)* and 482 as *targeted (treatment failure suspected)* on the lab request form. 6,429 were marked as 'routine' and retrospectively classified as *follow-up* due to a previous result collected from the same patient within 1 year before the current sample. This suggests ongoing challenges with the classification of reasons for testing, delayed follow-up and/or low utilization of VL results for patient management. The majority of patients with an initial high VL are likely to re-suppress after intensified adherence counselling and the confirmation of treatment failure usually depends on a second VL result of ≥1000 after 3 months. There was a net increase of 1,685 patients on 2nd line ART this quarter which is equivalent to 19% of the 8,997 routine VL results ≥1000 copies/ml from the previous quarter. The new VL registers were designed to facilitate tracking of samples and results and to formalize follow-up action on high VL results.

The time on ART was entered for only **28,861 (43%)** of 67,137 routine samples registered on the LIMS and only **10,216 (35%)** of these were drawn on schedule (from 1 month before to 3 months after a VL milestone). The proportion of patients with VL <1000 was **86%, 86%, 89%, 88%, 87%** and **86%** at 6, 24, 48, 72, 96 and 120 months on ART respectively. Viral suppression

[21] In addition to the reason specified on the lab form, samples were re-classified as 'follow-up' if another sample from the same patient was analysed within 1 year before the current one.

rates of samples drawn on schedule were similar to those of 'catch-up' (extra-schedular) samples and samples with unknown timing both at **86%.**

12.6 TB / HIV Management

3,742 (97%) of 3,853 new TB patients had their HIV status ascertained this quarter and **1,866 (50%)** of these were HIV positive. **1,741 (93%)** of HIV positives were already on ART at the time of TB treatment initiation. The number of new ART initiations during TB treatment is tracked by the National TB control program. Total ART coverage among co-infected patients at the end of TB treatment has consistently been >95%.

13 STI Treatment

This quarter, supervision teams collected STI data from 703 out of 928 facilities offering STI management according to the *2013-14 Service Provision Assessment*[22] in Malawi. The site-level reports included here may therefore only represent 76% of all STI services in Malawi. The supervision teams re-emphasized the importance of complete and accurate documentation at the sites and the data quality is expected to improve further with resumption of regular site supervision for the STI program. The complete set of STI program data collected is included in the Appendix.

13.1 Access to STI treatment and coverage

Based on the data collected at the facilities, a total of **77,663** STI cases were treated in Q4 2017. Considering the 76% site-level completeness of reporting, this number is estimated to represent a total of **102,188** STI cases treated. This is equivalent to **42%** of the estimated quarterly 241,725 STI cases in the population (extrapolation from 2015/16 MDHS)[23].

Out of **77,663** documented clients treated, **30,796** (40%) were male and **46,867** (60%) were female. **6, 869** (15%) of female STI clients were pregnant. **51,044** (68%) clients were 25 years and above, **18,724** (24%) were 20-24 years and **7,895** (10%) were under 20 years old.

13.2 Client Type and STI History

69,552 (90%) of clients were symptomatic and **8,111** (10%) were asymptomatic (treated as partners). Among symptomatic clients, **64,281** (92%) of were index cases and **5,271** (8%) were partners. A total of **21,547** partner notification slips were issued, equivalent to an average of 0.34 slips per index case. Considering the 21,547 partner notification slips issued, **62%** (13,382) of those notified presented to the clinic. **59,650** (77%) of clients presented with their first lifetime episode of STI, **13,157** (73%) clients reported to have had an STI more than 3 months ago and **4,856** (27%) of clients reported having had an STI within the last three months. Re-occurrence of an STI after a recent episode may be due to re-infection or treatment failure.

[22] Ministry of Health, & ICF International. (2015). Malawi Service Provision Assessment (SPA) 2013-14. Lilongwe, Malawi and Rockville, Maryland, USA. Retrieved from http://dhsprogram.com/pubs/pdf/SPA20/SPA20.pdf

[23] According to the 2015/16 MDHS, 14.7% of women (15-49 years) and 9.6% of men (15-64 years) reported STI symptoms in the past 12 months. A total of 966,900 annual STI cases are estimated by applying these proportions to the 4.1 million men and 3.9 million women in these age groups in the 2016 population (NSO projections). Quarterly STI cases are assumed as ¼ of the estimated annual cases.

13.3 HIV Status

HIV status was ascertained for **66,996** (86%) clients and **12,179** (18%) of these were HIV positive. **2,926** (24%) of positives were identified through a new test initiated at the STI clinic, while **9,253** (76%) presented with a documented previous positive HIV test result. **8,353** (90%) of clients with a previous positive HIV test result were on ART.

The rate of HIV status ascertainment at STI clinics has improved considerably over time. This is likely due to increased numbers of dedicated testing staff available at the sites (HDAs). Actual HIV ascertainment rates may be slightly higher due to weaknesses with back-referral from HIV testing rooms at sites where testing is not provided directly in the STI clinic. It is worth noting that a substantial proportion of clients who are aware of their HIV infection present with a new episode of an STI. This may suggest poor translation of positive living strategies promoted during counselling, but could also be due to the increased risk of recurrence of HSV-2 and balanitis among HIV-infected clients.

13.4 STI Syndromes and Referrals

The most common syndrome was abnormal vaginal discharge (AVD) with **24,157** (29%) cases, followed by urethral discharge (UD, **20,717** cases), genital ulcers (GUD, **1**1,**457** cases) and lower abdominal pain (LAP, **12,710** cases). Serologically confirmed syphilis accounted for 6% of the cases while balanitis, bubo, scrotal swelling and warts each accounted for 1% of cases.

Given the high risk of recent HIV infection among STI clients, all clients with unknown status and those with a new negative test result should be referred for (repeat) HIV testing and counselling. **30,259 (46%)** of the 65,484 STI clients with unknown or new negative test result were referred for repeat HTC. **2,507 (86%)** of 2,926 clients who were newly tested HIV positive were referred for ART.

14 Supply Chain Management of HIV Program Commodities

14.1 Quantification and procurement planning

The program conducted a quarterly quantification review using Q4 2017 ART cohort analysis and stock data to adjust supply plans for ARV, OI, STI and laboratory orders through the Pooled Procurement Mechanism (PPM). The program has also continued to provide quarterly supply planning updates to the Procurement Services Agents (PSA).

During Q4 2017, ARVs, medicines for opportunistic infections, anti-malarials and laboratory health products valued at USD 42.6 million were received at the Bollore Transport and Logistics managed warehouses dedicated for Department of HIV and National Malaria Control Program commodities (Refer to Table 6 for warehouse stock position). To maintain adequate stocks in the pipeline and hence ensure uninterrupted supply for subsequent orders, the Ministry of health initiated HIV commodity orders for ARVs, OI, RDTs, Condoms and other related commodities through Partnership for Supply Chain Management (ARVs and RDTs) and IDA Foundation (laboratory commodities and medicines for opportunistic infections) valued at USD 60.5 million. This will enable the program have uninterrupted availability of all critical HIV commodities required for attainment of the 90-90-90 targets and smooth transition to the Dolutegravir based regimen.

14.2 Quarterly supply chain support during Q4 integrated supervision

District and central level Supply Chain and Logistics Officers provided stock management support at over 352 sites during the Q4 2017 integrated ART/PMTCT site supervision. This included a physical inventory at all sites and ad-hoc mentoring in stock management at health facilities with poor performance. There was an overall improvement in the logistics management of ARVs and medicines for OI medicines.

Physical stock counts for ARVs and other medicines for HIV-related diseases were performed at all sites during the supervision visits in January 2018. Table 11 shows the total medicine stocks found at the sites and the estimated consumption patterns.

646,635 patients were on regimen 5A. This is equivalent to the forecasted patients for this quarter (645,249).

14.3 Availability of standard first line ARVs

646,635 of all ART patients were on the standard first line regimen (5A; tenofovir / lamivudine / efavirenz). This is equivalent to 86% of patients overall or 93% of patients on first line adult regimens. By January 2018, the total stock of this regimen was equivalent to 7.3 and 4.1 months of consumption at the warehouse and site-level, respectively. The physical stock count carried out during supportive supervision in January 2018 confirmed that 733 (99.9%) of 734 ART sites with patients on this regimen had available stocks. This translates into a stock out rate of 0.1% at ART sites with any patients on 5A. Such stock-out events are invariably short and managed actively through ad-hoc stock relocation between the affected facility and hub site. This is coordinated through the toll-free supply hotline. This healthy supply chain has enabled the program to consistently implement three monthly medicines dispensations for patients and implement the test and treat policy without national stock outs.

14.4 Bimonthly distribution of HIV & Malaria Commodities

Two successfully scheduled bimonthly distribution rounds of HIV & Malaria commodities including laboratory items (Distribution Round 38 and 39) took place during Q4 2017.

Logistics monitoring and supply chain trail of HIV commodities for distribution rounds 37 and 38 were conducted at 108 selected health facilities in South East, South West, Central East, Central West and North Zones. The supply chain trail is conducted to review distribution activities by the third-party logistics provider and review stock management documentation. All health facilities that were visited received their supplies as per the allocations hence no discrepancies were noted on the delivery notes. The supply chain team provided conducted physical inventory, mentorship in stock management and logistics tools documentation including use of Daily Activity Registers and completion of stock cards. The team also conducted redistribution of ARVs, STI medicines and Test kits between multiple sites to avert expiries and stock outs.

During Q4 2017, the logistics team at the Department of HIV and AIDS also coordinated a total of over 1,529 individual commodity transactions between ART sites to mitigate stock imbalances. The transactions are all managed and authorized using the HIV Department Supply Chain Hot Line, a toll free facility that was set up to facilitate communication between

the health facilities and the central level. Health workers are able to communicate supply chain and other HIV commodities related issues that need to be resolved by the technical team at the department in a timely manner.

Table 11

Total stocks of HIV program commodities at all sites visited during the 2017 Q4 supportive site supervision. Stock positions are from the date of the visit (between 1-4 weeks after the end of the quarter). Warehouse stock positions are from 05/02/2018

Inventory unit	Item	Sites with any Stock	Total Physical Stock		Consump-tion/ Month	Months of Stock *	
			At Sites	In Warehouse		At Sites	Wareh.
tins	ABC / 3TC 60 / 30mg tins (60 tabs)	**312**	**31,185**	**83,934**	6,924	4.5	12.1
	ABC / 3TC 600 / 300mg tins (30 tabs)	**261**	**10,589**	**4,349**	3,445	3.1	1.3
	ATV / r 300 / 100mg tins (30 tabs)	**445**	**35,259**	**45,149**	11,842	3.0	3.8
	AZT / 3TC / NVP 300 / 150 / 200mg tins (60 tabs)	**696**	**133,586**	**325,597**	35,250	3.8	9.2
	AZT / 3TC / NVP 60 / 30 / 50mg tins (60 tabs)	**667**	**299,857**	**278,140**	63,960	4.7	4.3
	AZT / 3TC 300 / 150mg tins (60 tabs)	**715**	**33,437**	**51,708**	8,363	4.0	6.2
	AZT / 3TC 60 / 30mg tins (60 tabs)	**632**	**19,577**	**46,217**	2,529	7.7	18.3
	EFV 200mg tins (90 tabs)	**206**	**2,778**	**7,891**	347	8.0	22.7
	EFV 600mg tins (30 tabs)	**289**	**11,899**	**7,893**	2,367	5.0	3.3
	LPV / r 100 / 25mg tins (60 tabs)	**237**	**15,880**	**71,371**	5,274	3.0	13.5
	LPV / r 200 / 50mg tins (120 tabs)	**116**	**1,965**	**240**	1,414	1.4	0.2
	NVP 200mg tins (60 tabs)	**628**	**49,301**	**107,477**	13,715	3.6	7.8
	NVP 50mg tins (60 tabs)	**221**	**12,424**	**4,773**	1,718	7.2	2.8
	TDF / 3TC / EFV 300 / 300 / 600mg tins (30 tabs)	**737**	**2,681,154**	**4,739,435**	646,635	4.1	7.3
	TDF / 3TC 300 / 300mg tins (30 tabs)	**708**	**54,448**	**43,711**	20,230	2.7	2.2
bottles	Fluconazole (Diflucan) 50mg / 5ml bottles (35 ml)	**5**	**308**		78	3.9	
	NVP 10mg/ml bottles (100 ml)	**581**	**41,094**	**15,927**	7,055	5.8	2.3
vials	Benzathine Penicillin 1.44g vials (50 each)	**404**	**56,161**	**120,000**	51,508	1.1	2.3
	Bleomycine 15,000IU vials (1 each)	**32**	**8,095**	**10,176**			
	Ceftriaxone 1g vials (10 each)	**374**	**153,773**		139,029	1.1	
	Depo-Provera 150mg/1ml vials (25 each)	**585**	**898,818**		332,701	2.7	
	Gentamicin 80mg / 2ml vials (50 each)	**622**	**859,538**		130,832	6.6	
	Streptomycin 1 g vials (50 each)	**74**	**42,654**				
	Vincristine 1mg / 1ml vials (1 each)	**38**	**5,995**	**24,191**	1,740	3.4	13.9
tabs	Aciclovir 200mg blist packs (500 tabs)	**62**	**184,793**	**500**	838,064	0.2	0.0
	Azithromycin 500mg blist packs (3 tabs)	**468**	**85,119**	**19,803**	13,831	6.2	1.4
	Ciprofloxacin 500mg blist packs (100 tabs)	**475**	**1,060,384**	**767,300**	396,417	2.7	1.9
	Clotrimazole 500mg boxes (1 each)	**515**	**44,655**	**75,541**	50,955	0.9	1.5
	Codeine 30mg tins (100 tabs)	**512**	**401,831**	**281,100**			
	Cotrimoxazole 100 / 20mg blist packs (1000 tabs)	**662**	**69,708,242**	**30,915,000**	11,811,312	5.9	2.6
	Cotrimoxazole 400 / 80mg tins (1000 tabs)	**667**	**44,978,945**		21,978,090	2.0	
	Cotrimoxazole 960mg blist packs (1000 tabs)	**732**	**115,808,393**	**173,661,000**	21,773,316	5.3	8.0
	Doxycycline 100mg tins (1000 tabs)	**565**	**4,497,579**	**7,142,000**	5,873,678	0.8	1.2
	E thambutol (E) 100 mg blist packs (100 tabs)	**105**	**241,996**				
	E thambutol (E) 400 mg blist packs (672 tabs)	**4**	**10,752**				
	Erythromycin 250mg tins (1000 tabs)	**338**	**1,291,552**	**640,000**	5,254,600	0.2	0.1
	Fluconazole (Diflucan) 200mg tins (28 tabs)	**141**	**255,676**	**640,192**	35,455	7.2	18.1
	Ibuprofen 200mg tins (100 tabs)	**246**	**2,235,711**		1,123,445	2.0	
	Isoniazid (H) 100mg blist packs (100 tabs)	**258**	**2,464,843**				
	Isoniazid (H) 300mg blist packs (672 tabs)	**228**	**41,642,434**	**115,072,608**	21,773,316	1.9	5.3
	Isoniazid (H) 300mg tins (1000 tabs)	**277**	**17,782,545**	**249,000**	21,773,316	0.8	0.0
	Morphine 10mg blist packs (60 tabs)	**32**	**193,867**		286,295	0.7	
	Pyridoxine 50mg tins (1000 tabs)	**220**	**26,681,507**		7,874,208	3.4	
	RH 150 / 75 mg blist packs (672 tabs)	**271**	**2,053,717**				
	RH 60 / 30 mg blist packs (84 tabs)	**31**	**85,810**				
	RH 60 / 60 mg blist packs (84 tabs)	**47**	**115,687**				
	RHE 150 / 75/ 275 mg blist packs (1000 tabs)	**129**	**306,912**				
	RHZ 60 / 30/ 150 mg blist packs (84 tabs)	**48**	**114,034**				
	RHZE 150/75/400/275mg blist packs (672 tabs)	**272**	**1,116,928**				

Inventory unit	Item	Sites with any Stock	Total Physical Stock		Consump-tion/ Month	Months of Stock *	
			At Sites	In Warehouse		At Sites	Wareh.
sheets	ART pat. card adult (yellow) Ver6 bundles (50 she	719	564,028	1,713	435,410	1.3	0.0
	ART pat. card paed. (blue) Ver6 bundles (50 shee	536	66,202	416			
	Exposed child card (pink) Ver2 bundles (50 sheet	578	62,321	1,042	4,231	14.7	0.2
	Family HTC Referral Slip bundles (100 sheets)	345	115,623				
	Polythene sleeve bundles (100 sheets)	197	23,501		17,540	1.3	
	STI Partner Referral Slip bundles (100 sheets)	148	11,187	10,070			
tests	DBS kit (filter paper, lancet, etc.) 50ul boxes (50 t	94	18,961		42,107	0.5	
	DBS kit (filter paper, lancet, etc.) 70ul boxes (50 t	680	344,786	76,150	42,107	8.2	1.8
	Determine HIV1/2 boxes (100 each)	716	1,865,562	1,044,200	307,481	6.1	3.4
	Determine syphilis boxes (100 each)	481	291,220	452,900	50,247	5.8	9.0
	Uni-Gold HIV1/2 boxes (20 each)	692	234,665	273,860	32,798	7.2	8.3
pieces	Condoms female boxes (1000 each)	250	288,212		246,023	1.2	
	Condoms male boxes (144 each)	656	21,882,252	8,877,312	8,705,470	2.5	1.0

* 'Consumption per month' and 'Months of stock' for ARVs, CPT, INH and HIV test kits are based on the respective patient-regimen groups in the standard service reports. Estimates are based on the number of patients on the respective regimen at the end of the quarter evaluated and do not account for potential (positive or negative) growth. Facility stock positions for OI and STI drugs include HIV Program and other supply sources. Total national consumption and MoS estimates are used for these commodity groups. 'Months of stock' is calculated from the day of the physical stock count, which is on average 1 month after the end of the quarter.

15 Training and Mentoring

15.1 HIV Testing Services

264 clinicians, laboratory technicians and nurses participated in the Malawi comprehensive HIV testing and counselling training. This is an initial provider training. **254 (96%)** passed the certification exam.

271 clinicians, laboratory technicians and nurses participated in the HTS skills intensive training. The skills intensive training aims at improving providers' service delivery skills. **261 (96%)** passed the certification exam.

15.2 ART/PMTCT

3,760 clinicians and nurses have been cumulatively trained in initial ART training according to the 2016 National Clinical HIV Guidelines.

149 mentors and trainers from 22 districts were trained in clinical mentoring. **60 (40%)** of 149 were trained as master trainers in preparation for the anticipated scale up of district level mentors scheduled for 2018.

15.3 STI

518 participants (Clinical Officers, Medical Officers, Medical Assistants and nurses) were trained in Syndromic Management of STIs based on the 2017 Malawi STI Guidelines for Syndromic Management of Sexually Transmitted Infections. **510 (98%)** of 518 fulfil the requirements of the training and were certified. The trainings were conducted to facilitate implementation of the 2017 STI Syndromic Management Guidelines in Malawi.

15.4 VMMC

40 participants were trained in the initial VMMC training. **19 (48%)** of 40 were nurses and **21 (52%)** clinicians. All participants passed the certification examination.

16 Participants in Q4 2017 Supervision (8-19 January 2018)

Absalom Kaunda (CO, MOH, Mzimba DHO)
Adamson Kayira (, PRIVATE)
Agnes Kalitsiro (Nurse, Mlambe Mission Hospital)
Aldin Mkwanda (, MoH)
Alice Mdolo (, MOH)
Alice Mponya (, Lighthouse)
Amin Khonje (, MSH)
Andraida Mtoseni (Nurse, MOH)
Andrew Dimba (, NTP)
Andrew Gompho (Clinician, MOH)
Andrew Mgaga (, I-Tech)
Angela Nkhoma (Nurse, MOH)
Annie Biza (Nurse, MDF)
Anthony Kanyoma (, MSH)
Ashani Kaliza (, MOH)
Austins Namondwe (CO, CHAM)
Beatrice Malonje (Nurse, MOH)
Belito Madetsa (CO, MOH)
Benard Kasinja (CO, I-TECH)
Benjamin Mazalo (CO, SUCOMA Clinic)
Bernadette Chibwana (, moh)
Bettie Kasonkanji (, Lighthouse)
Blessings Kamanga (Clerk, MOH)
Brown Chiwandira (MA, MOH)
Catherine Kassam (, MOH)
Cecilia Manyawa (Nurse, MOH)
Cecilia Mphika (, MOH)
Charles Ngwira (, MoH)
Chawanangwa Msonda (, MOH)
Chifundo Chomanika (MA, MHO)
Chifundo Makuluni (Nurse, MOH)
Chikayiko Majamanda (Nurse, MOH)
Chimwemwe Francis Mkandawire (IT Fellow, I-TECH)
Chimwemwe Mlenga (, MOH)
Chisomo Thondolo (Nurse, EGPAF)
Chiukepo Longwe (CO, Private)
Chrissy Lizengo (, MOH)
Chrissy Padoko (, MOH)
Christopher Mkwezalamba (CO, MOH)
Collins Mitambo (, MoH)
Cornelius Kang'ombe (, NTP)
Dalitso Midiani (PMTCT Officer, MOH)
Darlington Thole (CO, NGO)
Dave Muhasuwa (, MoH)
Dennis.supply Chain Fellow Kacheche (, I-TECH)
Diana Chipande (, MOH)
Dinala Lemani (, moh)
Dorica Sambo (Nurse, MOH)
Edith Thaulo (Nurse, MOH)
Edward Mwale (, MOH)
Elizabeth Chatsika (CO, CHAM)
Elsie Kasambwe (, I-TECH)
Erik Mittochi (CO (ART coord), MOH)
Evans Kagwira (TB Zonal Supervisor, MOH)
Everista Mkandawire (Nurse, MOH)
Fainala Muyila (Nurse, MOH)
Fatsireni Mapulanga (, MOH)
Felix Magwira (Clinical Cordinator, indep NGO)
Felix Mbalale (CO, MOH)
Florida Ngwenya (, MoH)
Francis Kachali (, MoH)
Francis Munthali (, COM)
Geoffrey Makhalira (, NTP)
George Lipande (CO, MOH)
George Sankhulani (CO, Dignitas)
Gift Kamphika (MA, MOH)
Gladson Waluza (, MOH)
Grace Chikhwaya (, MOH)
Grace Chipanga (Nurse, Private)
Grace Juma Nkhata (Nurse, MOH)
Grant Gondwe (, NTP)
Grey Malata (, MOH)
Hannock Matupi (ARV clinician, MOH, Rumphi DH)
Harrison Tembo (CO, MOH)
Harry Tsapa (CO, MOH)
Henry Kanyerere (TB/HIV Program Officer, MOH)
Henry Mwamatembe (, MOH)
Innocent Mwaluka (, moh)
Ireen Magongwa (, MSH)
Janet Chikonda (Nurse, MOH)
Jean Baptiste (, moh)
Jean Kayamba (Nurse, MOH)
Jean Tauzie (, I-TECH)
Jeke Mataya (, moh)
Jeremiah Mwale (CO, EGPAF)
Jesse Lobeni (Nurse, MOH)
Joe Jumbe (, MoH)
John Kabichi (CO, MOH)
Joseph Mphasa (, MoH)
Jotham Nyasulu (, MOH)
Judith Ntopa (Nurse, Cobbe Barracks)
Juliana Soko (ARV nurse, MOH, Livingstonia MH)
Kelvin Makina (Logistics, Kasungu)
Kingsley Mbewa (CO, MOH)
Knox Banda (TB Zonal Supervisor, MOH)
Kondwani Chikoti (CO, MOH)
Lameck Mlauzi (, NTP(MOH))
Leonard Banda (, MoH)
Levi Chirambo (, MoH)
Lightwell Zomba (, MOH)
Lilian Kachali (Nurse, MOH)
Limbani Mateyu (MA, MOH)
Lincy Chalunda (CO, MOH)
Linda Makata (, MOH)
Linda Vito (, MOH)
Lizzie Kachale (, MoH)
Lloyd Wella (CO, MOH)
Lucky Kabanga (Pharmacist, MOH)
Lydia Gumulira (C.O, CHAM)
Mabvuto Nyirenda (, MOH)
Macleod Piringu (ART CORDINATOR, MOH)
Madalitso Chosalawa (, MOH)
Madalitso Muyankha (, moh)
Magret Chigona (CO, MOH)
Malumbo Luwinga (Logistics, Kamuzu Central)
Margaret Chigona (CO, Blantyre DHO)
Margaret Katumbi (Nurse, MOH)
Mark Suzumire (CO, MOH)
Martin Maulidi (CO, I-TECH)
Mary Kamiza (TB Zonal Supervisor, NTP)
Mary Kaponya (, MOH)
Mathilda Kamanga (Nurse, Army)
Mercy Makaika (Nurse, MOH)
Merium Nkangala (, moh)
Merra Kaira (, MOH)
Michael Eliya (PMTCT Program Officer, MOH)
Mike Nyirenda (CO, Lighthouse)
Milos Mitumbu (CO, CHAM)
Mirriam Thindwa (Clinician, Limbe H/C)
Monica Simfukwe (Nurse, MOH, Chintheche RH)
Moses Tambala (Nusre, Baylor)
Noel Mphasa (TB Zonal Supervisor, NTP)
Nyuma Mbale (, MoH)
Oscar Kasiyamphanje (Nurse, CHAM)
Overton Ndhlovu (, MOH)
Owen Manda (Nurse, Public)
Patience Chingwalungwalu (, MoH)
Patience Mtenje (Nurse, MOH)
Patrick Gomani (, TB Challenge)
Patrick Mwamlima (, MoH)
Patrick Ngwira (, NTP)
Patrick Paul J M Chirwa (TB Zonal Supervisor, NTP)
Paul Gondwe (, MOH)
Paul Nyasulu (CO, I-TECH)
Pax Mkupani (Logistics Fellow, MOH)
Pepsy Nangwale (Nurse, MOH)
Peter Chimphero (CO, MOH)
Peter Donda (CO, Dedza DH)
Peter Mzumara (ART clinician, MOH)
Pilirani Banda (, MoH)
Portifer Mission (, moh)
Randof Maseya (, MOH)
Raymond Changamire (, Chemonics)
Relia Mandindi (, Public)
Rellia Nkhata (, MOH)
Richard Abuduo (CO, MOH)
Richard Kamalizeni (Nurse, MOH)
Robert Khombe (, MOH)
Rodney Gonani (CO, CHAM)
Rodrick Kaulere (CO, CHAM (Sister Tereza))
Rose Mabviko (, MOH)
Ruth Deula (Nurse, CHAM)
Sam Banda (, moh)
Sam Nowa (Pharmacist, MOH)
Samson Chitsulo (, other)
Samuel Banda (Nurse, MOH)
Samuel Chilala (, BAYLOR)
Semu Bangelo (, MOH)
Sidder Hambisa (ENM, MOH)
Stanford Miyango (Pharmasist, MOH)
Stanley Ngoma (CO, MOH)
Stanley Phombo (Nurse, MOH)
Stony Mbiriyawanda (, MOH)
Stuart Chuka (CO, MBCA)
Sydney Kubwalo (, MoH)
Tadala Hamisi (Logistics, KCH)
Tamara Nyauti (, Lighthouse)
Taona Selemani (, NTP)
Temweka Mtenje (, MoH)
Thoko Kalua (, HIV DEPT)
Thokozani Kamvamgomo (, MoH)
Thomas Mwale (, MOH)
Tiyamike Msyamboza (, other)
Tolani Kumwenda (, moh)
Vera Kajawa (Nurse, MOH)
Vincent Nyapigoti (NMT, MOH)
Vitu Nkhunga (, MOH)
Vuso Tembo (, MoH)
Washingtone Ozitiosauka (CO, MOH)
Wells Banda (CO, MOH)
Weston Njamwaha (Clinician, PIH)
Wezzie Luhanga (, MOH)
William Mtonga (CO, CHAM)
Willie Chiumbuzo (, MoH)
Yamikani Gumulira (, MOH)
Yunus Chiosa (, NTP)

Report compiled by the Department of HIV and AIDS:

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We thank all facility staff for their sincere welcome and co-operation with the HIV Department and its partners during these supportive visits. We congratulate all staff for their excellent work.

12th April 2018

17 Appendix (Full National HIV Program Data)

HTC site report

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

Clients at health facility (static)

HTC client details

*

Total HTC clients served

Total HIV tested	944,008	100%

Sex

Males tested	322,262	34%
Females tested	621,746	66%
Females non-pregnant	**418,542**	67%
Females pregnant	**203,204**	33%

Age

Children 0-14 yrs	103,275	11%
Children below 12 mths (Age group A)	**4,190**	4%
Children 12 mths - 14 yrs (Age group B)	**99,085**	96%
Adults 15+ years	840,733	89%
Young adults 15-24 years (Age group C)	**375,875**	45%
Older adults 25+ yrs (Age group D)	**464,858**	55%

HTC access type

PITC	663,004	70%
Family Referral Slip (FRS)	11,277	1%
Other (VCT, etc.) HTC access	269,727	29%

HTC first time / repeat

Never tested before	223,001	24%
Previously accessed HTC	721,007	76%
Last negative	**681,747**	95%
Last positive	**37,759**	5%
Last exposed infant	**673**	0%
Last inconclusive	**828**	0%

Counseling session type / Partner present

Counseled with partner / partner present	206,791	22%
Counseled alone / Partner not present	737,217	78%

Outcome summary (HIV test)

Single test negative	871,057	92%
Single test positive	32	0%
Test 1&2 negative	799	0%
Test 1&2 positive	69,477	7%
Test 1&2 discordant	2,643	0%

Final result given to client

Results among clients never tested / last negative	906,410	96%
New negative	**872,645**	96%
New positive	**31,058**	3%
New exposed infants	**190**	0%
New inconclusive	**2,517**	0%
Confirmatory results (previous positive clients)	37,598	4%
Confirmatory positive	**37,331**	99%
Confirmatory inconclusive	**267**	1%

* Subgroups may not add to 100% due to rounding

HTC client details

*

Partner / Family HTC referral slips

Sum of slips given		55,055	100%
	Total clients presenting with referral slip	**11,277**	20%
	Total failed referrals (slips not returned)	**43,778**	80%

Clients tested in the community

HTC client details

*

Total HTC clients served

Total HIV tested		29,710	100%

Sex

Males tested		13,812	46%
Females tested		15,898	54%
	Females non-pregnant	**13,648**	86%
	Females pregnant	**2,250**	14%

Age

Children 0-14 yrs		3,755	13%
	Children below 12 mths (Age group A)	**16**	0%
	Children 12 mths - 14 yrs (Age group B)	**3,739**	100%
Adults 15+ years		25,955	87%
	Young adults 15-24 years (Age group C)	**13,485**	52%
	Older adults 25+ yrs (Age group D)	**12,470**	48%

HTC access type

PITC		8,245	28%
Family Referral Slip (FRS)		378	1%
Other (VCT, etc.) HTC access		21,087	71%

HTC first time / repeat

Never tested before		10,453	35%
Previously accessed HTC		19,257	65%
	Last negative	**18,574**	96%
	Last positive	**661**	3%
	Last exposed infant	**0**	0%
	Last inconclusive	**22**	0%

Counseling session type / Partner present

Counseled with partner / partner present		1,785	6%
Counseled alone / Partner not present		27,925	94%

Outcome summary (HIV test)

Single test negative		28,168	95%
Single test positive		0	0%
Test 1&2 negative		16	0%
Test 1&2 positive		1,485	5%
Test 1&2 discordant		41	0%

HTC client details

*

Final result given to client

Results among clients never tested / last negative		29,049	98%
	New negative	**28,164**	97%
	New positive	**831**	3%
	New exposed infants	**11**	0%
	New inconclusive	**43**	0%
Confirmatory results (previous positive clients)		661	2%
	Confirmatory positive	**654**	99%
	Confirmatory inconclusive	**7**	1%

Partner / Family HTC referral slips

Sum of slips given		1,960	100%
	Total clients presenting with referral slip	**378**	19%
	Total failed referrals (slips not returned)	**1,582**	81%

Clients at stand-alone HTC sites

HTC client details

*

Total HTC clients served

Total HIV tested		4,027	100%

Sex

Males tested		1,916	48%
Females tested		2,111	52%
	Females non-pregnant	**1,461**	69%
	Females pregnant	**650**	31%

Age

Children 0-14 yrs		168	4%
	Children below 12 mths (Age group A)	**7**	4%
	Children 12 mths - 14 yrs (Age group B)	**161**	96%
Adults 15+ years		3,859	96%
	Young adults 15-24 years (Age group C)	**1,578**	41%
	Older adults 25+ yrs (Age group D)	**2,281**	59%

HTC access type

PITC		1,109	28%
Family Referral Slip (FRS)		21	1%
Other (VCT, etc.) HTC access		2,897	72%

HTC first time / repeat

Never tested before		767	19%
Previously accessed HTC		3,260	81%
	Last negative	**3,083**	95%
	Last positive	**166**	5%
	Last exposed infant	**0**	0%
	Last inconclusive	**11**	0%

Counseling session type / Partner present

Counseled with partner / partner present		989	25%
Counseled alone / Partner not present		3,038	75%

HTC site report

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

HTC client details

*

Outcome summary (HIV test)

Single test negative	3,675	91%
Single test positive	6	0%
Test 1&2 negative	9	0%
Test 1&2 positive	319	8%
Test 1&2 discordant	18	0%

Final result given to client

Results among clients never tested / last negative		3,861	96%
	New negative	**3,683**	95%
	New positive	**163**	4%
	New exposed infants	**0**	0%
	New inconclusive	**15**	0%
Confirmatory results (previous positive clients)		166	4%
	Confirmatory positive	**161**	97%
	Confirmatory inconclusive	**5**	3%

Partner / Family HTC referral slips

Sum of slips given		153	100%
	Total clients presenting with referral slip	**21**	14%
	Total failed referrals (slips not returned)	**132**	86%

* Subgroups may not add to 100% due to rounding

Blood safety

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

Infect. disease screening among potential donors *

HIV screening

HIV testing not done	1,535	21%
Tested for HIV	5,642	79%
HIV negative	**5,372**	95%
HIV positive	**270**	5%

Hepatitis B screening

HepB testing not done	1,537	21%
Tested for Hepatitis B	5,640	79%
HepB Negative	**5,394**	96%
HepB Positive	**246**	4%

Hepatitis C screening

HepC testing not done	3,195	45%
Tested for Hepatitis C	3,982	55%
HepC Negative	**3,925**	99%
HepC Positive	**57**	1%

Syphilis screening

Syphilis testing not done	1,630	23%
Tested for Syphilis	5,547	77%
Syphilis Negative	**5,439**	98%
Syphilis Positive	**108**	2%

Malaria screening

Malaria testing not done	2,430	34%
Tested for malaria	4,747	66%
Malaria Negative	**4,342**	91%
Malaria Positive	**405**	9%

Summary screening outcome

Not donated	2,559	36%
Donated	4,618	64%
Screened for at least HIV, HepB and syphilis	**3,941**	85%
Screened for HIV, HepB, HepC, Syphilis, Malaria	**3,121**	79%
Screened for HIV, HepB, Syphilis	**820**	21%
Screened for HIV, HepB	**0**	0%
Screened for HIV only	**0**	0%
Screened with any other combination of tests	**677**	15%

Cross-matching report *

Blood group typing (for units and patients)

Total blood group typing done	21,038	100%

Blood units cross-matched (by source)

Total blood units cross-matched	15,910	100%
Total units from MBTS (estimated)	**11,292**	71%
Total units from replacement donors	**4,618**	29%

Blood units cross-matched by patient group

Units cross-matched for maternity	3,136	20%
Units cross-matched for paediatrics	3,805	24%
Units cross-matched for other ward	8,969	56%

* Subgroups may not add to 100% due to rounding

Blood safety

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

Cross-matching report

*

Transfusion reactions

Units transfused without adverse events	15,884	100%
Units with suspected transfusion reactions	22	0%
Units with confirmed transfusion reactions	4	0%

 * Subgroups may not add to 100% due to rounding

Antenatal Care

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

New ANC registrations in reporting period *

Women with first visit in reporting period

New women registered	159,785	100%

ANC cohort analysis *

Trimester of first visit

Started ANC 0-12 wks	20,257	13%
Started ANC 13+ wks	139,528	87%

HIV status ascertainment

HIV status not ascertained	5,570	3%
HIV status ascertained	154,215	97%
Valid previous test result	**11,303**	7%
Previous negative	**4,237**	37%
Previous positive	**7,066**	63%
New test at ANC	**142,912**	93%
New negative	**139,136**	97%
New positive	**3,776**	3%

HIV status summary

Total women HIV negative	143,373	93%
Total women HIV positive	10,842	7%

PMTCT regimen mother

No ARVs	189	2%
Any ARVs	10,653	98%
ART (by time of initiation)	**10,653**	100%
Already on ART when starting ANC	**6,954**	65%
Started ART at 0-27 weeks of pregnancy	**3,220**	30%
Started ART at 28+ weeks of preg.	**479**	4%

ANC women after 6 months

ANC cohort analysis *

Total women completing ANC in the reporting period

Total women in booking cohort	150,893	100%

Visits per woman

Women with 1 visit	28,521	19%
Women with 2 visits	35,567	24%
Women with 3 visits	45,394	30%
Women with 4 visits	32,877	22%
Women with 5+ visits	8,534	6%

Pre-eclampsia

No pre-eclampsia	149,477	99%
Pre-eclampsia	1,416	1%

TTV doses

0-1 TTV doses	73,110	48%
2+ TTV doses	77,783	52%

SP tablets

0 SP doses	42,347	28%
1 SP dose (1 x 3 tabs)	34,868	23%
6+ SP tablets (2 x 3 tabs)	73,678	49%

* Subgroups may not add to 100% due to rounding

Antenatal Care

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

ANC cohort analysis

*

FeFo tablets

0-119 FeFo tablets	118,206	78%
120+ FeFo tablets	32,687	22%

Albendazole (Deworming)

0 Albend. doses	36,575	24%
1 Albend. dose	114,840	76%

ITN (bednets)

No ITN	30,340	20%
ITN received	120,775	80%

Syphilis status

Not tested for syphilis	24,685	16%
Tested for syphilis	126,208	84%
Syphilis negative	**124,708**	99%
Syphilis positive	**1,500**	1%

HIV status ascertainment

HIV status not ascertained	3,919	3%
HIV status ascertained	146,974	97%
Valid previous test result	**10,817**	7%
Previous negative	**3,850**	36%
Previous positive	**6,967**	64%
New test at ANC	**136,157**	93%
New negative	**131,951**	97%
New positive	**4,206**	3%

HIV status summary

Total women HIV negative	135,801	92%
Total women HIV positive	11,173	8%

CPT status (among HIV pos)

Not on CPT	451	4%
On CPT	10,722	96%

PMTCT regimen mother

No ARVs	175	2%
Any ARVs	10,998	98%
ART (by time of initiation)	**10,998**	100%
Already on ART when starting ANC	**6,900**	63%
Started ART at 0-27 weeks of pregnancy	**3,494**	32%
Started ART at 28+ weeks of preg.	**604**	5%

Baby's ARVs dispensed

No ARVs dispensed for infant	850	8%
ARVs dispensed for infant	10,323	92%

* Subgroups may not add to 100% due to rounding

Maternity

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

Maternal details

*

Admissions in the reporting period

Total admissions (referrals double-counted)	141,479	100%
Not referred to other site (total women)	**133,993**	95%
Referred out before delivery (multiple admissions)	**7,486**	5%

HIV status ascertainment

HIV status not ascertained	1,448	1%
HIV status ascertained	140,583	99%
Valid previous test result	**117,426**	84%
Previous negative	**107,639**	92%
Previous positive	**9,787**	8%
New test at maternity	**23,157**	16%
New negative	**22,951**	99%
New positive	**206**	1%

HIV status summary

Total women HIV negative	130,590	93%
Total women HIV positive	9,993	7%

ARVs during pregnancy (among HIV pos)

No ARV in pregnancy	87	1%
Any ARVs	9,906	99%
ART (by time of initiation)	**9,906**	100%
ART initiated before pregnancy	**8,781**	89%
ART initiated in 1st / 2nd trimester	**679**	7%
ART initiated in 3rd trimester	**327**	3%
ART initiated during labour	**119**	1%

Obstetric complications

No obstetric complications	124,791	88%
Any obstetric complications	17,240	12%
Haemorrhage	**2,712**	16%
Haemorrhage ante-partum	**837**	31%
Haemorrhage post-partum	**1,875**	69%
Obstr / prol labour	**5,725**	33%
(pre-) Eclampsia	**1,143**	7%
Maternal sepsis	**123**	1%
Ruptured uterus	**118**	1%
Other obstetric complications	**7,419**	43%

Emergency obstetric care

Oxytocin	131,570	94%
Anticonvulsive	757	1%
Antibiotics	7,344	5%
Blood transfusion	423	0%
Manual removal of placenta	222	0%

Vitamin A

Vit A not given	63,794	45%
Vit A given	78,237	55%

Maternity

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

Maternal details

*

Staff conducting delivery

Category A: MO, CO, nurse/midwife, MA	129,364	96%
Category B: PA, WA, HSA	231	0%
Category C: Other	4,950	4%

Mother survival

Mother alive	134,464	100%
Mother died	81	0%

Infant details

*

Single babies / multiple deliveries

Total babies delivered	137,030	100%
Single babies	**132,531**	97%
Twin / multiple babies	**4,499**	3%

Delivery place

Total deliveries at a health facility	131,881	96%
This facility	**131,597**	100%
Other facility	**284**	0%
Total deliveries before reaching the facility	5,149	4%
In transit	**3,493**	68%
Home / TBA	**1,656**	32%

Delivery mode

Spontaneous vaginal	122,939	90%
Vacuum extraction	1,338	1%
Breech	2,159	2%
Caesarean section	10,594	8%

Infant complications

No infant complications	118,962	87%
Total infants with complications	18,068	13%
Prematurity	**3,995**	22%
Weight less 2500g	**5,756**	32%
Asphyxia	**5,446**	30%
Sepsis	**829**	5%
Other newborn complication	**2,042**	11%

Infant survival

Total live births	134,616	98%
Discharged alive	**133,582**	99%
Neonatal deaths	**1,034**	1%
Stillbirths	2,414	2%
Stillbirth, fresh	**1,260**	52%
Stillbirth, macerated	**1,154**	48%

* Subgroups may not add to 100% due to rounding

Maternity

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

Infant details

*

HIV exposure / ARV proph. (among discharged alive)

Infants with unknown HIV exposure status	1,062	1%
Infants with known HIV exposure status	132,520	99%
Not HIV exposed	**123,132**	93%
HIV exposed	**9,388**	7%
Received no ARVs	**518**	6%
Received ARVs	**8,870**	94%
Nevirapine	**8,870**	100%

Breastfeeding initiated

BF not started within 60min	12,592	9%
BF started within 60min	124,438	91%

Tetracycline eye ointment given

TO not given	68,278	50%
TO given	68,752	50%

* Subgroups may not add to 100% due to rounding

HIV exposed child follow-up

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

Age 2 months

Age cohort outcomes

*

Total children in birth cohort

Total children registered	10,707	100%

CPT status

On CPT	9,450	88%
Not on CPT	1,257	12%

HIV status

Current HIV infection status unknown	3,125	29%
HIV infection not confirmed, not ART eligible	**3,083**	99%
HIV infection not confirmed, ART eligible (PSHD)	**42**	1%
Current HIV infection status known	7,582	71%
Confirmed not infected	**7,516**	99%
Confirmed infected (ART eligible)	**66**	1%

ART eligibility summary

Not eligible for ART	10,599	99%
ART eligible	108	1%
ART not initiated	**48**	44%
Initiated ART	**60**	56%

Primary follow-up outcome

Discharged uninfected	16	0%
Continue follow-up	9,494	93%
Started ART	60	1%
Defaulted	554	5%
Died	45	0%

Transfers between sites

Total not transferred out	10,169	95%
Transferred out	538	5%

Age 12 months

Age cohort outcomes

*

Total children in birth cohort

Total children registered	10,713	100%

CPT status

On CPT	8,213	77%
Not on CPT	2,500	23%

HIV status

Current HIV infection status unknown	2,852	27%
HIV infection not confirmed, not ART eligible	**2,850**	100%
HIV infection not confirmed, ART eligible (PSHD)	**2**	0%
Current HIV infection status known	7,861	73%
Confirmed not infected	**7,673**	98%
Confirmed infected (ART eligible)	**188**	2%

* Subgroups may not add to 100% due to rounding

HIV exposed child follow-up

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

Age cohort outcomes

*

ART eligibility summary

Not eligible for ART		10,523	98%
ART eligible		190	2%
	ART not initiated	**5**	3%
	Initiated ART	**185**	97%

Primary follow-up outcome

Discharged uninfected	41	0%
Continue follow-up	8,209	82%
Started ART	185	2%
Defaulted	1,443	14%
Died	90	1%

Transfers between sites

Total not transferred out	9,968	93%
Transferred out	745	7%

Age 24 months

Age cohort outcomes

*

Total children in birth cohort

Total children registered	10,149	100%

CPT status

On CPT	578	6%
Not on CPT	9,571	94%

HIV status

Current HIV infection status unknown		3,230	32%
	HIV infection not confirmed, not ART eligible	**3,215**	100%
	HIV infection not confirmed, ART eligible (PSHD)	**15**	0%
Current HIV infection status known		6,919	68%
	Confirmed not infected	**6,664**	96%
	Confirmed infected (ART eligible)	**255**	4%

ART eligibility summary

Not eligible for ART		9,879	97%
ART eligible		270	3%
	ART not initiated	**31**	11%
	Initiated ART	**239**	89%

Primary follow-up outcome

Discharged uninfected	6,398	67%
Continue follow-up	475	5%
Started ART	239	3%
Defaulted	2,269	24%
Died	153	2%

Transfers between sites

Total not transferred out	9,534	94%
Transferred out	615	6%

ART cohort analysis

Malawi (National)

2017 Q4 (Quarter)

Registration details

*

ART clinic registrations

Total ART clinic registrations	39,882	100%

Registration type

First time ART initiations (total patients)	29,245	73%
ART re-initiations	520	1%
ART transfers in	10,117	25%

Sex

Males	15,608	39%
Females	24,274	61%
Non-pregnant	**18,676**	77%
Pregnant	**5,598**	23%

Age at ART initiation

Adults 15+ yrs	36,902	93%
Children 0-14 yrs	2,980	7%
Children 2-14 yrs	**2,342**	79%
Children below 24 mths	**638**	21%

Reason for starting ART

Presumed severe HIV Disease	72	0%
Confirmed HIV infection	39,810	100%
WHO stage 1 or 2	**33,842**	85%
CD4 below threshold	**1,494**	4%
CD4 unknown or >threshold	**32,348**	96%
PCR infants	**130**	0%
Children 12-59 mths	**752**	2%
Pregnant women	**5,552**	17%
Breastfeeding mothers	**1,540**	5%
Asymptomatic / mild	**24,374**	75%
WHO stage 3	**4,670**	12%
WHO stage 4	**1,244**	3%
Unknown / reason outside of guidelines	**54**	0%

TB at ART initiation

Never TB / TB > 24 months ago	39,309	99%
TB within the last 24 months	305	1%
Current episode of TB	268	1%

Kaposi's sarcoma at ART initiation

No KS	39,737	100%
Patients with KS	145	0%

* Subgroups may not add to 100% due to rounding

ART cohort analysis

Malawi (National)

2017 Q4 (Cumulative)

Registration details

*

ART clinic registrations

Total ART clinic registrations	1,427,752	100%

Registration type

First time ART initiations (total patients)	1,131,616	79%
ART re-initiations	26,813	2%
ART transfers in	269,323	19%

Sex

Males	523,128	37%
Females	904,624	63%
Non-pregnant	**727,846**	80%
Pregnant	**176,778**	20%

Age at ART initiation

Adults 15+ yrs	1,306,244	91%
Children 0-14 yrs	121,508	9%
Children 2-14 yrs	**94,158**	77%
Children below 24 mths	**27,350**	23%

Reason for starting ART

Presumed severe HIV Disease	4,127	0%
Confirmed HIV infection	1,423,625	100%
WHO stage 1 or 2	**745,330**	52%
CD4 below threshold	**355,650**	48%
CD4 unknown or >threshold	**389,680**	52%
PCR infants	**3,644**	1%
Children 12-59 mths	**14,698**	4%
Pregnant women	**163,762**	42%
Breastfeeding mothers	**53,512**	14%
Asymptomatic / mild	**154,064**	40%
WHO stage 3	**548,467**	39%
WHO stage 4	**116,347**	8%
Unknown / reason outside of guidelines	**13,481**	1%

TB at ART initiation

Never TB / TB > 24 months ago	1,352,780	95%
TB within the last 24 months	36,891	3%
Current episode of TB	38,081	3%

Kaposi's sarcoma at ART initiation

No KS	1,408,277	99%
Patients with KS	19,475	1%

* Subgroups may not add to 100% due to rounding

ART cohort analysis

Malawi (National)

2017 Q4 (Cumulative)

ART outcomes

*

Primary follow-up outcomes

Total alive on ART		750,631	65%
	Alive on ART at site of last registration	**740,589**	99%
	ART patients in transit between sites	**10,042**	1%
Defaulted		299,881	26%
Stopped ART		5,567	0%
Total died		102,350	9%
	Died month 1	**22,403**	22%
	Died month 2	**13,372**	13%
	Died month 3	**8,700**	9%
	Died month 4+	**57,875**	57%

Transfers between sites

Total not transferred out	1,148,387	80%
Transferred out	279,365	20%

ART regimens

First line regimens		724,270	98%
	Adult formulation	**697,652**	96%
		Regimen 0A	**990**	0%
		Regimen 2A	**35,250**	5%
		Regimen 4A	**1,062**	0%
		Regimen 5A	**646,635**	93%
		Regimen 6A	**13,715**	2%
	Paed. formulation	**26,618**	4%
		Regimen 0P	**687**	3%
		Regimen 2P	**25,584**	96%
		Regimen 4P	**347**	1%
Second line regimens		15,014	2%
	Adult formulation	**13,256**	88%
		Regimen 7A	**5,547**	42%
		Regimen 8A	**6,295**	47%
		Regimen 9A	**1,150**	9%
		Regimen 10A	**113**	1%
		Regimen 11A	**151**	1%
	Paed. Formulation	**1,758**	12%
		Regimen 9P	**1,621**	92%
		Regimen 11P	**137**	8%
Other regimen (adult / paed)		1,305	0%

Adherence

Adherence unknown (not recorded)	24,129	3%
Adherence recorded	716,460	97%
0-3 doses missed	**584,973**	82%
4+ doses missed	**131,487**	18%

ART side effects

Side effects unknown (not recorded)	4,519	1%
Side effects recorded	736,070	99%
No side effects	**728,002**	99%
Any side effects	**8,068**	1%

* Subgroups may not add to 100% due to rounding

ART cohort analysis

Malawi (National)

2017 Q4 (Cumulative)

ART outcomes

*

Current TB status among ART patients (ICF)

ICF not done (Current TB status unknown/ not circ)		9,290	1%
ICF done		731,299	99%
	TB not suspected	**717,269**	98%
	TB suspected	**11,981**	2%
	TB confirmed	**2,049**	0%
		TB confirmed, not on treatment	**300**	15%
		TB confirmed, on TB treatment	**1,749**	85%

Pregnant / Breastfeeding

Pregnant females	740,589	100%

* Subgroups may not add to 100% due to rounding

Viral load monitoring cohort report

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

VL samples collected in the reporting period *

VL samples collected

Total VL samples	62,927	100%

Reason for VL test

Routine / scheduled monitoring	57,105	91%
Extra-schedular	4,540	7%
Targeted (clinical suspicion of failure)	**2,210**	49%
Follow-up after high VL	**2,330**	51%
Replacement of lost sample / missing result	1,282	2%

Results for VL samples collected 6 months ago *

Total VL samples with outcomes

Total VL samples collected 6 months ago	48,966	100%

VL test results

Valid results	44,800	91%
<1000 copies / ml	**37,907**	85%
1000+ copies / ml	**6,893**	15%
Rejected samples / invalid results	340	1%
Missing / outstanding results	3,826	8%

Result transmission type

Paper results	47,563	97%
Electronic results	1,403	3%

Time from sample collection to receipt of results

0-4 Weeks	19,836	41%
5-8 Weeks	18,888	39%
9-12 Weeks	4,586	9%
13+ Weeks / still missing	5,656	12%

Time from sample collection to client notification

0-4 Weeks	10,394	21%
5-8 Weeks	6,938	14%
9-12 Weeks	5,265	11%
13+ Weeks / pending	26,369	54%

Patients with high VL: outcome after 6 months *

Patients in high VL cohort

Total high VL patients evaluated after 6 months	6,947	100%

Initial high VL: reason for test

Routine / scheduled monitoring	6,064	87%
Targeted (clinical suspicion of failure)	413	6%
Repeat sample	470	7%

Intensive adherence counselling

3 Sessions completed	2,855	41%
Sessions not completed	4,092	59%

* Subgroups may not add to 100% due to rounding

Viral load monitoring cohort report

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

Patients with high VL: outcome after 6 months

*

Follow-up VL test

Follow-up sample collected		2,605	37%
	Valid results	**1,717**	66%
	<1000 copies / ml	**644**	38%
	1000+ copies / ml	**1,073**	62%
	Rejected samples / invalid results	**2**	0%
	Missing / outstanding results	**886**	34%
Follow-up sample pending		4,342	63%

Preliminary opinion

Conclusion made		2,821	41%
	Continue current regimen	**2,113**	75%
	Switch to 2nd line ART	**708**	25%
Conclusion pending		4,126	59%

Final treatment decision (2nd line prescriber)

Decision made		2,091	30%
	Continue current regimen	**1,446**	69%
	Switch to 2nd line ART	**560**	27%
	Refer to HIV specialist	**85**	4%
Decision pending		4,856	70%

* Subgroups may not add to 100% due to rounding

STI site report

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

STI clients treated in the reporting period *

Total STI clients

Total STI clients treated		77,663	100%
	Index patients treated (symptomatic)	**64,281**	83%
	Partners treated	**13,382**	17%

Sex

Males		30,796	40%
	Males Non-circumcised	**22,999**	75%
	Males Circumcised	**7,797**	25%
Females		46,867	60%
	Non-pregnant	**39,998**	85%
	Pregnant	**6,869**	15%

Age group

Age group A (0-19 years)		7,895	10%
Age group B (20-24 years)		18,724	24%
Age group C (25+ years)		51,044	66%

Client type

Symptomatic cases		69,552	90%
	Index cases	**64,281**	92%
	Partners symptomatic	**5,271**	8%
Partners asymptomatic		8,111	10%

STI treatment history

Never treated for STI		59,650	77%
Previously treated for STI		18,013	23%
	Old >3 months ago	**13,157**	73%
	Recent ≤3 months ago	**4,856**	27%

STI syndromic diagnosis

GUD		11,457	14%
UD		20,717	25%
AVD		24,157	29%
	Low risk	**7,921**	33%
	High risk	**16,236**	67%
LAP		12,710	15%
SS		1,031	1%
BU		726	1%
BA		1,231	1%
NC		623	1%
Genital Warts		798	1%
Syphilis RPR VDRL		4,758	6%
Other STI		4,952	6%

STI partner notification

Total partner notification slips issued		21,547	100%
	Total partners returned	**13,382**	62%
	Total partners not seen	**8,165**	38%

* Subgroups may not add to 100% due to rounding

STI site report

Malawi (National)

2017 Q4 (1st month of quarter, 2nd month of quarter, 3rd month of quarter)

STI clients treated in the reporting period

*

HIV test / ART status

HIV status not ascertained	10,667	14%
HIV status ascertained	66,996	86%
HIV negative (new test)	**54,817**	82%
HIV positive	**12,179**	18%
New positive	**2,926**	24%
Previous positive	**9,253**	76%
Not on ART	**900**	10%
On ART	**8,353**	90%

STI clients referred for services

Lab	1,189	3%
Gynae review	816	2%
Surgical review	431	1%
Repeat HTC	30,259	76%
ART (for assessment)	2,507	6%
PMTCT	2,048	5%
Other (service referrals)	2,416	6%

* Subgroups may not add to 100% due to rounding